DETERMINANTS OF THE MAGNITUDE OF FOREIGN DIRECT INVESTMENT:
AN ANALYSIS OF KOREAN MANUFACTURING MNCs

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

By

Seong-Soo Kim, B.B.A., M.B.A.
Denton, Texas
December, 1993
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The few studies to date indicate that the characteristics of Third World multinational corporation (MNC) differ from those of the traditional MNCs. Hence, there is reason to believe that some of the determinants of foreign direct investment (FDI) by the traditional MNCs may not be influential in the case of Third World MNCs. This fact raises doubts concerning the generalizability of the existing FDI theories to explain the FDI behavior of Third World MNCs.

The purpose of this study is, therefore, to investigate empirically the firm- and location-specific determinants of the magnitude of FDI by Korean manufacturing MNCs--one of the leading Third World MNCs. This study also examines firm-specific characteristics that distinguish Korean MNCs investing in developing countries from those investing in developed countries.

The present study analyzes 176 FDI cases made by 134 Korean manufacturing firms during the 1988-1990 period. The foreign direct investment data of individual Korean firms
were acquired from the Bank of Korea which monitors and screens FDI activities of Korean firms.

The present study represents a major departure from past research because it uses disaggregated firm-level data. Previous research used aggregated industry- or country-level data, although the existing FDI theories intend to explain FDI behavior of individual firms.

The findings of the study indicate that R&D- and advertising-intensity have no significant impact on the magnitude of FDI by Korean MNCs. The magnitude of FDI increases with increasing capital intensity of Korean MNCs, a tendency that becomes stronger with increasing firm size. Members in a conglomerate group appear to make more investment than nonmembers. Among the location-specific variables of host countries, only the per capita GDP of host countries has a significant positive impact on the magnitude of FDI. Finally, Korean MNCs investing in developing countries are more labor-intensive than those investing in developed countries.
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CHAPTER I

OVERVIEW OF THE STUDY

Introduction

Several common modes exist for serving foreign markets, including exporting, licensing, joint ventures, and wholly owned subsidiaries. Foreign direct investment (FDI) is a mode of serving foreign markets by establishing foreign production facilities through a joint venture or a wholly owned subsidiary. The unique feature of FDI is a mechanism through which a multinational corporation (MNC) retains control over business activities outside its national boundaries. Therefore, FDI entails overseas production and marketing activities of a firm's products.

Following United Nation's Definition, this study defines an MNC as a firm that owns production or service facilities in more than one country outside its home country (United Nations 1978). There is no single definition of MNC that is unanimously accepted by academicians (Asheghian and Ebrahimi 1990; Lee and Kwok 1988; Robock, Simmonds, and Zwick 1977). However, the foregoing definition is widely adopted by numerous scholars (Casson 1982; Dunning 1981; Hood and Young 1979; Kumar 1980; Lall 1983; Wells 1983).
The Rise of Third World MNCs

The determinants of foreign direct investment by multinational corporations have been extensively investigated. However, most studies in this area have been based on behavior of advanced-country multinational corporations (hereafter referred to as the traditional MNCs), in particular U.S. MNCs. This is because the traditional MNCs account for a large fraction of the international flow of foreign direct investment (FDI) by private firms. In fact, until the late 1960s, developing countries acted only as host countries for multinational corporations from developed nations and very seldom as home countries (Chen 1981).

Developed countries no longer dominate multinational activities. From the late 1960s, MNCs based in developing countries (hereafter referred to as Third World MNCs) began to engage in foreign direct investment. Since then, Third World MNCs' share in world FDI is increasing even though the home bases of these Third World multinational corporations are limited to the developing countries that have large industrial sectors. These countries include Argentina, Brazil, Mexico, South Korea, Hong Kong, India, Singapore, and Malaysia (Wells 1981).

The estimated outward foreign direct investment by Third World MNCs in 34 host countries was about $50 billion in 1985 (Fujita 1990). The recent growth of outward foreign
direct investment from Third World multinational corporations has been due mainly to accelerating FDI outflows from Asian countries. Total FDI outflows from developing countries from 1983 to 1988 was $12.1 billion, and FDI outflows from Asian countries accounted for 89% ($10.77 billion) of FDI from developing countries during the period of 1983-1988 (Tolentino 1990).

The rise of Third World MNCs has raised a number of issues. These issues are the validity of the existing FDI theories which aim exclusively at the traditional MNCs, the characteristics and behavior of Third World MNCs as compared with those of the traditional MNCs, and the role of Third World MNCs in the economic development of the host countries. However, despite their differences from the traditional MNCs and their growing importance in transferring capital and technology (Giddy and Young 1982; Tolentino 1990; Wells 1977, 1981, 1983), Third World MNCs have received little attention in the literature.

The characteristics of these Third World MNCs may be quite different from those of the traditional MNCs. At first glance, Third World MNCs do not seem to possess advanced technology and/or sophisticated marketing skills that give them either the motivation or the expertise to invest abroad (Lecraw 1981). However, they seem to invest largely in other developing countries in many of the same industries as the traditional MNCs: consumer electronics,
<table>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>0.06</td>
<td>0.06</td>
<td>0.04</td>
<td>0.05</td>
<td>0.1</td>
<td>0.04</td>
</tr>
<tr>
<td>South-East</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asia</td>
<td>0.3</td>
<td>0.3</td>
<td>1.0</td>
<td>0.8</td>
<td>1.9</td>
<td>5.4</td>
</tr>
<tr>
<td>Western</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asia</td>
<td>0.2</td>
<td>0.1</td>
<td>0.07</td>
<td>0.3</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Latin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>America</td>
<td>0.3</td>
<td>0.08</td>
<td>0.1</td>
<td>0.2</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Oceania</td>
<td>0.001</td>
<td>0.003</td>
<td>0.001</td>
<td>-0.008</td>
<td>-0.02</td>
<td>0.03</td>
</tr>
<tr>
<td>Eastern</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>0.001</td>
<td>0.01</td>
<td>0.001</td>
<td>0.02</td>
<td>0.008</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Total             | 0.862| 0.6  | 1.2  | 1.3  | 2.3  | 5.89 |

textiles and clothing, machine tools, and construction. Therefore, Third World multinational corporations not only affect the economies of host countries (mostly developing countries), but also compete with the traditional MNCs even though they may not actively compete head on with their counterparts from the developed countries. They challenge markets held by the traditional MNCs and weaken the bargaining power of some traditional MNCs by offering alternatives to developing host countries.

For some developing countries, Third World MNCs might be more attractive politically and economically than the traditional MNCs (Wells 1977). Third World MNCs are more likely to share ownership with local partners and offer their know-how at a low cost to the host country (Wells 1983).

In addition, Third World MNCs might be more suited to achieving developing countries’ objectives in the acquisition of technology and management skills than the traditional MNCs. Technologies and management skills of multinational corporations are related to their home country environments. For example, the traditional MNCs may have management skills in operating large-scale enterprises because the relatively large market size of industrialized nations tends to support large firms. Further, the home market characteristics of developed countries are quite different from those of developing countries. Hence,
technologies and management skills of the traditional MNCs might be less appropriate for and less consistent with the factor endowments of developing nations.

The home market characteristics of Third World MNCs, on the contrary, tend to be similar to those of developing country host markets in terms of a relatively small market size, a plentiful and inexpensive labor force (unskilled and semiskilled labor force), and a low level of income. Labor-intensive, unsophisticated technologies and management skills for operating the small-scale manufacturing of Third World MNCs seem especially well suited for application in other developing countries. Therefore, Third World MNCs might "reduce somewhat the dependency of the developing countries on the multinationals of the rich countries" (Wells 1981, p. 161).

Finally, Third World MNCs focus on providing undifferentiated products at low prices to markets whose demand tends to be price elastic. In contrast, the traditional MNCs concentrate on providing highly differentiated products to world markets.

Korean MNCs: An Example of Third World MNCs

This study will examine the behavior of Third World MNCs by investigating the FDI practices of MNCs from the Republic of Korea (henceforth called Korean MNCs). Korean MNCs fit the description of Third World MNCs in terms of
home country characteristics. A Korean multinational corporation is defined as a Korean firm that owns production or service facilities in more than one country outside Korea.

As other Third World MNCs, Korean MNCs began to make foreign direct investment from the late 1960s. The total FDI outflows by Korean MNCs that occurred between 1968 and 1990 were approximately $2.92 billion, and in total 1,531 foreign subsidiaries were established during this period (the Bank of Korea 1991). These Korean MNCs, such as Samsung, Hyundai, Goldstar, and Daewoo, have invested in a wide range of industries, including consumer electronics, construction, textile, food processing, chemicals, banking, and mining.

The selection of Korean manufacturing MNCs as the research units is justified for the following reasons. First, Korea, which has large industrial sectors, is one of the leading Third World Nations actively engaged in foreign direct investment (Wells 1981). Therefore, Korean MNCs seem to represent Third World multinational corporations well.

Second, even though FDI by Korean multinationals has been small compared to that of the traditional MNCs, the total volume of FDI by Korean MNCs (KMNCs) is not an insignificant amount in the context of the size, resources, and state of economic development of Korea. The total volume of manufacturing foreign direct investment (MFDI)
outflows between 1968 and 1990 was approximately $2.92 billion, and manufacturing foreign direct investment accounted for approximately $1.173 billion (the Bank of Korea 1991). Although Korean manufacturing production facilities have been established primarily in Southeast Asia, they are extended to Africa, Europe, North America, South America, the Middle East, and Oceania (table 2). Furthermore, Korean manufacturing MNCs established 500 foreign subsidiaries during the period of 1968-1990.

Third, manufacturing foreign direct investment (MFDI) by Korean multinational corporations, which started in 1968, has been increasing substantially in the past decade, as shown in table 2. From 1978 to 1990, the average annual growth rate of MFDI by Korean MNCs was 128 percent. This rapid growth rate of Korean manufacturing FDI is evidence of the growing importance of developing country MNCs in transferring know-how and capital.

In summary, Korean MNCs seem to represent Third World MNCs well. Furthermore, the rapid growth of Korean MNCs suggests that the literature should direct more attention to Third World MNCs.
# TABLE 2

**TOTAL REGIONAL MANUFACTURING FDI BY KOREAN MNCs FROM 1968 TO 1990**

(Thousands of U.S. Dollars)

<table>
<thead>
<tr>
<th>Region</th>
<th>No. of Subsidiaries</th>
<th>Amount of MFDI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Established</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>295</td>
<td>374,169</td>
</tr>
<tr>
<td>Middle East</td>
<td>7</td>
<td>17,437</td>
</tr>
<tr>
<td>North America</td>
<td>82</td>
<td>528,111</td>
</tr>
<tr>
<td>South America</td>
<td>61</td>
<td>53,170</td>
</tr>
<tr>
<td>Europe</td>
<td>26</td>
<td>66,302</td>
</tr>
<tr>
<td>Africa</td>
<td>9</td>
<td>11,318</td>
</tr>
<tr>
<td>Oceania</td>
<td>20</td>
<td>10,643</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>500</strong></td>
<td><strong>1,061,150</strong></td>
</tr>
</tbody>
</table>

FDI and International Marketing

Foreign direct investment should not be interpreted as just a firm's involvement in international production. A firm makes all the important business decisions if it engages in foreign direct investment. These decisions include production, pricing, promotion, distribution, and personnel management. FDI is one alternative mode of servicing a foreign market. The magnitude of FDI by a company demonstrates the degree to which the company wants to commit itself to a certain market. Foreign direct investment, therefore, is an essential part of the international marketing discipline.

Purpose of the Research

The overall purpose of this research is to understand the behavior of Korean manufacturing firms that engage in foreign production. More specifically, the proposed research has two principal objectives.

The first objective of this research is to investigate the firm-specific determinants and the host country-specific determinants that influence the magnitude of outward manufacturing foreign direct investment (MFDI) by Korean manufacturing multinational corporations. According to the existing FDI theories, firm-specific or ownership-specific advantages, such as the possession of advanced technology and/or sophisticated marketing skills, determine an MNC's
ability to compete successfully with indigenous firms and potential investors in a host country. The existing FDI theories also suggest that location-specific factors of the host countries influence FDI of MNCs. These location-specific factors include market size, market growth rate, and political environment.

The second objective of this study is to explore whether there are differences between the firm-specific factors that influence Korean MFDI in developing host countries and Korean MFDI in developed host countries. The few studies that focused on Third World MNCs did not investigate FDI by these MNCs in developed countries. Rather, those studies examined FDI activities of Third World MNCs in other developing countries.

Scope of the Research

Manufacturing foreign direct investment (MFDI) by Korean MNCs started in 1968 and increased substantially during the past decade (table 3). The total outflow of manufacturing foreign direct investment by Korean MNCs between 1968 and 1990 was approximately $1.173 billion. But the bulk of this investment (approximately $1 billion and 85.25 percent of the total MFDI outflow during this period) took place between 1987 and 1990 (table 3). Financial statements of Korean manufacturing firms which invested in 1987 are not available because Korean Investors
<table>
<thead>
<tr>
<th>Year</th>
<th>Total Amount of MFDI (thousand of dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1968-71</td>
<td>6,949</td>
</tr>
<tr>
<td>1975</td>
<td>7,039</td>
</tr>
<tr>
<td>1976</td>
<td>1,562</td>
</tr>
<tr>
<td>1978</td>
<td>8,203</td>
</tr>
<tr>
<td>1979</td>
<td>4,117</td>
</tr>
<tr>
<td>1980</td>
<td>5,349</td>
</tr>
<tr>
<td>1981</td>
<td>4,202</td>
</tr>
<tr>
<td>1982</td>
<td>5,454</td>
</tr>
<tr>
<td>1983</td>
<td>26,479</td>
</tr>
<tr>
<td>1984</td>
<td>13,428</td>
</tr>
<tr>
<td>1985</td>
<td>20,105</td>
</tr>
<tr>
<td>1986</td>
<td>70,104</td>
</tr>
<tr>
<td>1987</td>
<td>157,746</td>
</tr>
<tr>
<td>1988</td>
<td>74,500</td>
</tr>
<tr>
<td>1989</td>
<td>223,091</td>
</tr>
<tr>
<td>1990</td>
<td>545,099</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,173,427</strong></td>
</tr>
</tbody>
</table>

Service, Inc. began to publish Korean firms' financial statements from 1989. Hence, this research will focus on Korean manufacturing FDI that occurred between 1988 and 1990. Specifically, the present study analyzes 176 FDI decisions made by Korean manufacturing MNCs during the 1988-1990 period.

The focus on the manufacturing sector does not mean that Korean MNCs do not engage in foreign direct investment in other sectors, or that FDI in service or extractive sectors is not important. Actually, Korean MNCs invested approximately $1.28 billion in other industry sectors between 1968 and 1990 (the Bank of Korea 1991). However, the existing FDI theories deal with manufacturing foreign direct investment, and thus this research focuses on manufacturing foreign direct investment by Korean MNCs. We may need a different theoretical framework to explain FDI activities of other industry sectors.

**Significance of the Research**

This research can be justified because of its significant contribution to the development of a foreign direct investment theory for Third World MNCs and thereby to the development of a general theory of FDI. In addition, this study makes significant contributions to the practice of international business and international marketing.
Contribution to the Development an FDI Theory for Third World MNCs

It is essential for the International Marketing discipline to have a theoretical framework to which researchers can turn for an understanding of Third World MNCs. A theoretical framework is needed because of the growing importance of Third World MNCs in international business. However, we do not have an FDI theory for Third World MNCs. The present study makes significant contributions to the development of an FDI theory for Third World MNCs for the following reasons.

First, this research tends to overcome one of the major limitations of the previous research on Third World MNCs, that is, the paucity of complete and reliable data (Lall 1983; Wells 1983). The present foreign direct investment data from Korea is very complete and reliable because FDI outflow by Korean MNCs is screened and monitored by the Bank of Korea.

Second, unlike previous studies, this research tests specific hypotheses regarding the behavior of Third World MNCs. Therefore, this research will contribute significantly to understanding the FDI behavior of Third World MNCs.

Third, this research seems to be the first empirical research that uses both firm level FDI data and firm-level financial statements in investigating the behavior of Third World MNCs, rather than using aggregated data. Therefore,
it will provide a clear picture of FDI activities of Third World MNCs. Furthermore, by using disaggregated firm-level data, the present study will explain FDI behavior of individual firms, as the existing FDI theories intend to do.

In summary, this study increases the validity of the research results because it empirically test specific hypotheses with reliable firm-level data. Previous studies on Third World MNCs investigate industry-level FDI activities and are descriptive in nature. Therefore, this study will contribute significantly to the development of a foreign direct investment theory for Third World MNCs due to the fact that it provides more general insights into the FDI behavior of individual Third World MNCs.

Contribution to the Development of A General Theory of FDI

The ultimate goal of a discipline is to develop a general theory. A general theory of FDI, however, does not exist currently because the existing FDI theories do not explain the FDI behavior of Third World MNCs. Rather, those theories focus exclusively on the FDI activities of the traditional MNCs.

One way to develop a general theory is to combine subtheories (Hunt 1984). That is, all the subtheories should be combined to build a general theory of FDI. The present research will contribute significantly to the development of a general theory of FDI, because this
research will provide a foundation for developing an FDI theory for Third World MNCs—a subtheory of a general theory of FDI.

Contribution to the Practice

The present research has some managerial implications. First, from the behavior of Third World MNCs, the managers of firms based in developing countries can learn how to compete successfully in the world markets. More specifically, an understanding of the factors that influence the magnitude of FDI by Korean manufacturing MNCs will help the managers of developing country firms when they make foreign direct investment decisions.

Second, Third World MNCs are potential threats to the traditional MNCs, because Third World MNCs challenge markets held by the traditional MNCs and weaken the bargaining power of some traditional MNCs by offering alternatives to developing host countries. Therefore, it is necessary for the managers of the traditional MNCs to have a good understanding of the FDI behavior of Third World MNCs in order to make a better strategic preparation against their potential threats. This research will help the managers of the traditional MNCs, because the empirical findings of this study will provide some insights into the types of firm-specific advantages possessed by Third World MNCs.
Summary of Chapter 1

Chapter 1 argues that more attention should be paid to Third World MNCs owing to their growing importance in transferring capital and technology to other countries. This chapter raises an important issue regarding the validity of the existing foreign direct investment theories which aim exclusively at the traditional MNCs. It explains why Korean MNCs are selected for investigation. Additionally, the chapter explains the purpose and scope of the research and the significance of the present research.

Chapter 2 will review literature relevant to the present research. Theoretical arguments and empirical findings of each FDI theory are discussed, along with limitations. Chapter 2 also reviews the previous studies on Third World MNCs.
CHAPTER II

LITERATURE REVIEW

Introduction

There has been little research on FDI activities of Third World MNCs, although numerous studies have investigated FDI behavior of the traditional MNCs, especially manufacturing MNCs. In fact, only a few studies investigated behavior of Third World MNCs. Furthermore, even less attention has been devoted to developing a theoretical framework for analyzing Third World MNCs. Therefore, as Wells (1983) states, there is no single foreign direct investment theory in the literature to which one can turn for an understanding of the FDI behavior of Third World MNCs.

This chapter reviews the literature aimed at the traditional MNCs as well as the few studies on Third World MNCs. This chapter is divided into two sections. The first section presents a critical review of the existing FDI theories relevant to the interests of this research. Theoretical arguments and empirical findings of each foreign direct investment theory will be presented, along with limitations of each FDI theory.
The second section reviews the previous studies on Third World MNCs. This section will focus on characteristics unique to Third World MNCs. Conceptual arguments will be made to explain why the characteristics of Third World MNCs are different from those of the traditional MNCs.

Review of Foreign Direct Investment Theories

This section will review theoretical and empirical literature on the existing FDI theories relevant to this research. Specifically, literature on the monopolistic advantage theory, the internalization theory, the location-specific advantage FDI theory, and the eclectic theory will be reviewed.

The Monopolistic Advantage Theory

The monopolistic advantage theory of foreign direct investment pioneered by Hymer (1976) is an international extension of industrial organization theory. It is based on identification of market structure imperfections. Market structure imperfections refer to the existence of monopolistic or oligopolistic characteristics that deviate from purely market determined prices (Calvet 1981). Market

\footnote{Monopolistic advantage is a firm's ability to remove or prevent competition based on an exclusive possession of superior technology, marketing skills, or other intangible assets which enable the firm to erect entry barriers.}
structure imperfections arise from a firm's possession of Bain-type advantages. Bain-type advantages include superior technology, product differentiation, distribution networks, and scale economies (Bain 1956). All of these advantages help the multinational corporation to close markets and thereby to enhance its market power (Dunning and Rugman 1985).

Therefore, the theory argues that MNCs should possess rent-yielding intangible assets (monopolistic advantages) before they engage in foreign direct investment. For MNCs to engage in foreign production, these monopolistic advantages should provide not only an edge over rivals at home, but also an edge over potential investors in the host country (Lall 1982); and these advantages must outweigh the costs of conducting business in unfamiliar foreign environments. Furthermore, the intangible assets can be transferred from one country to another, but cannot be acquired by local firms (Asheghian and Ebrahimi 1990; Kindleberger 1969). To minimize the risk of dissemination of these monopolistic advantages, MNCs put in place mechanisms to control these intangible assets.

Multinational corporations engage in foreign production because they have the ability to separate markets and remove competition, or to exploit their monopolistic advantages.

Monopolistic advantages may be divided into two
groups: (a) those based on product differentiation created by investment in R&D and/or advertising, and (b) those based on firm size. Therefore, it could be expected that foreign direct investment would be heavy from firms which tend to possess ownership advantages based on R&D, advertising, and firm size.

Caves (1971) contends that the possession of monopolistic advantages created by R&D and advertising enables a firm to achieve a high degree of product differentiation. If the assets are associated with R&D, then product differentiation might take the form of a technologically superior product; and if the assets are associated with advertising, then differentiation might result from more subjective considerations, such as brand images created by advertising (Graham 1978). Therefore, the theory predicts that MNCs would be prevalent in oligopolistic industries characterized by high R&D and advertising expenditures because the monopolistic advantages increase the barriers to entry of new competition, which in turn promote market concentration within countries.

Empirical evidence supporting the monopolistic advantage theory is very impressive. Numerous previous studies report that advertising-intensity and R&D-intensity have positive impact on the foreign direct investment level (Caves 1974; Gruber, Metha, and Vernon 1967; Hirsch 1976; Lall 1980). Hymer (1976) presents empirical evidence to
show that a propensity for foreign direct investment to occur is greater in highly concentrated industries than in less concentrated industries. Baldwin (1979) finds that industry concentration ratios, which are used as proxies for the extent of product differentiation, are positively related to foreign direct investment.

Kim and Lyn (1987) show that industries with monopolistic power, measured by Tobin's q (the market value of a firm in excess of the replacement costs of its assets), tend to obtain a smaller fraction of reverse foreign direct investment (foreign direct investment in the U.S. by MNCs from other countries). This evidence means that monopolistic power of U.S. industries acts as an entry barrier against reverse foreign direct investment. Kim and Lyn also find that capital-intensity and advertising-intensity act as entry barriers to FDI in the U.S.

Large firm size may stand for firm-specific advantages. It may stand for a firm's ability to finance research and development and massive advertising. A large firm has advantages in industries where economies of scale and multiplant operations are important. Also, a large firm size may reflect distinct benefits of its own, including privileged access to capital markets, greater political influence, and underutilized managerial resources, which enable a firm to engage in foreign direct investment (Lall 1980; Lall and Siddharthan 1982).
Empirical research indicates that firm size has positive impact on foreign direct investment. After investigating the influence of several variables, Horst (1972) finds that firm size is the only significant factor that influences the probability of a firm to engage in FDI. Yu and Ito (1988) report that firm size has a positive impact on the propensity to engage in FDI activities of tire and textiles industries. Kimura (1989) finds that firm size has a positive impact on the magnitude of FDI. Typically, firm size is measured either by the total assets of a firm or by the total sales of a firm.

Not all empirical findings support the monopolistic advantage theory, however. Ozawa (1977) observes that Japanese international investment is comparable with a relatively competitive domestic market structure among Japanese MNCs. More specifically, he finds that the less monopolistic or oligopolistic the industry, and the less technologically sophisticated, the more Japanese industry engages in foreign direct investment, a phenomenon contradictory to the tenets of monopolistic advantage theory. Lall and Siddharthan (1982) report that product differentiation is not a significant advantage to foreign MNCs in the United States. They conclude that the direct causal links between domestic market concentration, development of net monopolistic advantages, and the development of such advantages in highly concentrated
industries observed for U.S. MNCs are not observable for foreign MNCs investing in the United States. Kim and Lyn (1990) report that foreign-based MNCs operating in the United States do not enjoy monopolistic advantages over U.S. competitors. They conclude that the monopolistic advantage theory of FDI may not apply to foreign MNCs investing in the U.S. markets.

The theoretical weaknesses of the monopolistic advantage theory of FDI have been discussed by several scholars. Johanson and Vahlne (1977) state that the theory lacks explanatory value at the firm level. Aliber (1970) criticizes the theory on the following grounds: (1) it cannot predict the country pattern of foreign direct investment; (2) it does not explain foreign investment through takeovers; and (3) it is not integrated with alternative entry modes, i.e., exports and licensing.

Dunning and Rugman (1985), Rugman (1986), and Teece (1985) assert that the monopolistic advantage theory emphasizes market power rather than efficiency by restricting its view to the structural market imperfections. They argue that the theory overlooks cognitive market imperfections. Dunning (1981a) classifies market imperfections into structural and cognitive imperfections. Structural market imperfections arise because of monopolistic advantages that enhance the asset power of an MNC. These advantages help the MNC to close markets and
thereby to increase its market power. Cognitive
imperfections arise if information about the product or
service being marketed is not readily available, or is
costly to acquire. The cost of uncertainty leads
multinationals to organize an internal market (i.e., to
engage in FDI) to improve efficiency rather than engaging in
arms-length transactions in the markets. Teece (1981)
contends that MNCs are more capable of establishing
efficient vertical supply relations and transferring
technology efficiently than exercising market power, even
though they have both efficiency and market power
properties.

The theoretical criticisms can be summarized as
follows. First, monopolistic advantage theory fails to
recognize cognitive market imperfection. Second, the theory
does not fully explain modes of servicing foreign markets.
Finally, the theory lacks explanatory power in expounding
firm- and country-level FDI patterns.

Despite the theoretical weaknesses and some
nonsupporting empirical evidence, substantial empirical
support suggests that the monopolistic advantage theory is a
viable theory in explaining FDI behavior of MNCs. MNCs must
possess some type of monopolistic advantages before they can
engage in FDI if they want to compete successfully in the
uncertain environments of the host nations.
The Internalization Theory

Buckley and Casson’s (1976) internalization theory of FDI is based on the fundamental concept of market imperfections advanced by Coase (1937). Internalization refers to the creation of an internal market of a firm to overcome natural and unnatural market imperfections. Therefore, the theory views foreign direct investment by MNCs as a hierarchical response to natural and unnatural market imperfections (Rugman 1982). In other words, the theory asserts that multinational corporations use hierarchical organizational structures as a substitute for inoperable and inefficient market systems (Rugman 1986).

Natural market imperfections exist because of the public-goods nature of knowledge. Knowledge, which is created by the private investment of a firm, is considered to be a public good. Knowledge is a public good because the consumption of such knowledge by one party does not preclude the use of knowledge by others (Casson 1983; Johnson 1970; Rugman 1980). On the other hand, the consumption of knowledge by second parties reduces the private return on knowledge created by the firm (Magee 1976).

A private good can be priced in a market according to supply and demand conditions. On the contrary, a public good cannot be priced in a market until property rights are given through patent to the creator of knowledge or until a firm becomes a sole supplier of knowledge (Rugman 1980). As
Henart (1982, p. 104) states, "Patent grants to the innovator a temporary monopoly of the sale of the good embodying know-how."

However, due to the lack of internationally accepted property rights across nations it is very costly and inefficient for the firm to enforce property rights and to control information flow. Moreover, the firm may not want to take the risk of disseminating firm-specific knowledge through licensing. Because of the foregoing reasons, a firm has an incentive to internalize the knowledge and engage in foreign direct investment instead of licensing to foreign producers.

Through internalization, an MNC can assign property rights to itself (Rugman 1986). Internalization also permits an MNC to regulate and monitor the use of its knowledge advantage (Rugman 1980). Licensing only will be viable when knowledge is not a source of advantage or when knowledge becomes standardized. In these situations, the risk of dissemination is low enough to allow licensing as a viable alternative.

Knowledge is also an intermediate product. Accordingly, its pricing must take place through monopolization of final goods or services (Rugman 1980) since intermediate product markets are difficult to organize due to their imperfections (Calvet 1981).
Market imperfection for knowledge may arise between a buyer and a seller because they do not have the same amount of information regarding the nature and value of knowledge (Hood and Young 1979). Information about knowledge may not be readily available to the buyer or may be costly to acquire. Therefore, the buyer and the seller may not agree with the actual value of knowledge. The buyer may refuse to pay a higher price to the seller because of the former's ignorance.

In addition to contractual difficulties in pricing know-how, there are contractual difficulties in writing, executing, and enforcing restrictions on governing technology transfer arrangements (Teece 1985). Moreover, it will be very difficult to transfer knowledge efficiently through the market because the efficient transfer of knowledge may be impossible without involvement of the organization's total capabilities (Teece 1983).

Internalization will overcome these impediments by providing a more efficient transfer of technology, better governance, and easier agreement. Through internalization, a firm can enhance the return on investment in R&D owing to the monopolistic use of knowledge (Rugman 1980). The cost-saving aspect of the intra-organization mode of transferring technology will also enhance the return on investment (Teece 1985).
Unnatural market imperfections exist because of the barriers to trade imposed by governments (Rugman 1982). If there are no barriers to trade, then there is no reason for foreign direct investment. All foreign markets would be served by exports in a world of free trade since country-specific factors would determine comparative advantages. However, in the real world, free trade conditions rarely exists. This provides another incentive to internalize.

The internalization theory has several limitations. A major limitation is its tautological nature. Buckley (1983), Casson (1982), and Rugman (1986) point out that the theory of internalization is tautological at its general level because the theory predicts that a firm will internalize imperfect markets until the cost of further internalization is greater than the benefits. This statement is tautological because the cost of internalization determines the degree of internalization; the degree of internalization explains the cost of internalization. A theory which has a tautological nature does not meet the required theoretical conditions of falsifiability (Popper 1959). "Falsifiable means the extent to which a statement is capable of being shown to be empirically untrue" (Hunt 1983, p. 197). Therefore, the internalization theory cannot be tested directly at its general level unless further refinements are made.
To overcome the tautological problem of the internalization theory, Buckley (1983, p. 42) states that precisely specified restrictions must be imposed on "the relative size of transaction costs in internal and external markets" to generate testable hypotheses. Teece (1983) actually attempts to solve this problem by dimensionalizing the transaction cost properties of MNCs so that the theory can predict the conditions for the appropriate entry mode. Hill and Kim (1988) develop a transaction cost model to overcome the limitations of this theory. However, no rigorous empirical tests have been conducted despite some efforts (Buckley 1979, 1981, 1988) for two reasons: first, the difficulty of precise specification of transaction cost functions; and second, the difficulty of measuring related variables. As Buckley (1988) points out, the literature does not show how to estimate transaction costs, despite its listing of them.

In summary, the internalization theory argues that a firm will create internal markets to overcome market imperfections caused by natural or unnatural barriers. MNCs are expected to be established if the internalization occurs across national boundaries. Through internalization, not only can MNCs exploit the knowledge advantage more efficiently by avoiding arms-length transaction in the markets, but they can avoid the risk of dissemination of knowledge. Despite its powerful analytical appeal, the
theory is very difficult to operationalize (Casson 1986) because of its tautological nature. Therefore, future research must focus on specifying transaction cost functions and measuring related variables.

The Location-Specific Advantage Theory of FDI

To explain the foreign direct investment behavior by MNCs, both home and host country location-specific factors must be considered. Location-specific factors refer not only to the differential resource endowments of countries, but also to a wide range of environmental conditions and characteristics of a particular country, such as the political climate, regulatory conditions, the relative cost and availability of production factors, and market characteristics.

Location Advantages of the Host Country

Little doubt exists about the importance of host country location-specific factors in foreign direct investment decisions. A substantial amount of research on this issue (Agodo 1978; Aharoni 1966; Ajami and Barniv 1984; Bass, McGregor, and Walters 1977; Bennett and Green 1972; Brewer 1981; Chase, Kuhle, and Walther 1988; Davidson 1980; Fatehi-Sedeh and Safizadeh 1989; Goodnow and Hansz 1972; Green 1972; Green and Cunningham 1975; Kobrin 1976, 1978, 1979; Levis 1979; Maclayton, Smith, and Hair 1980; Nigh
suggests that the importance of location-specific factors in determining FDI. Numerous host country-specific variables, such as economic, sociocultural, political, and geographical conditions, have been used to investigate the impact of location-specific variables on the foreign direct investment decisions by MNCs. Among those variables, market conditions (market size and market growth) and political conditions (political stability) of a host country have been the most extensively investigated variables.

Market size and market growth

Market size is important for the allocation of foreign direct investment because manufacturing foreign direct investment usually requires a certain minimum plant capacity and output level to support efficient operations (Agodo 1978). Market growth is expected to influence the FDI decision positively because it is a good indicator of market development potential.

Numerous empirical studies have been conducted to investigate the impact of market size and market growth on FDI by MNCs. Empirical research consistently reports that the market size of the host country, measured in terms of
gross national product (GNP), per capita GNP, gross domestic product (GDP), or per capita GDP, has a significant positive impact on foreign direct investment (Agodo 1979; Davidson 1980; Green and Cunningham 1975; Kobrin 1976; Nigh 1985; O’Sullivan 1985; Root and Ahmed 1978; Scaperlanda and Mauer 1969; Schneider and Frey 1985; Schollhammer and Nigh 1984). However, the impact of population size, another measure of market size, on FDI is inconsistent. Kobrin (1976) and Agodo (1979) find that population size is a major determinant of FDI; but, Green and Cunningham (1975) report that population size is not an important determinant of FDI. Empirical findings on the market growth rate of the host country, measured either by GNP growth rate or GDP growth rate, is also inconsistent. Schneider and Frey (1985) and Schollhammer and Nigh (1984) find that market growth rate of the host country is an important factor in determining the allocation of foreign direct investment; however, Nigh (1985) and Scaperlanda and Mauer (1969) report that market growth rate is not a significant determinant of FDI.

Two conclusions can be drawn from the above empirical evidence. First, market size, measured in terms of GNP, per

\footnote{GDP is the total value in current market prices of all goods and services produced by residents of a country before deduction of depreciation charges on fixed capital. GDP differs from GNP by excluding net factor income received from abroad.}
capita GNP, GDP, or per capita GDP, has a significant positive impact on the allocation of foreign direct investment. Second, contrary to common expectations, empirical evidence about the impact of market growth rate and population size on FDI is inconsistent. However, as Agodo (1978) points out, population size might be important for the investors of low-priced consumer products because it better represents the aggregate purchasing power for these products.

Political stability

Political stability is one of the most extensively investigated host country environmental factors (Aharoni 1966; Chase, Kuhle, and Walther 1988; Fatehi-Sedeh and Safizadeh 1989; Kobrin 1976; Root 1968; Nigh 1985; Root and Ahmed 1978, 1979; Schneider and Frey 1985). We might intuitively think that a country in which there is political instability should be less attractive to foreign direct investment than a country offering political stability. However, empirical evidence fails to yield consistent results on this issue.

The empirical research in this area can be grouped into two categories: survey-type research (mail survey with questionnaire to executives of MNCs) and econometric-type research (statistical methods developed for analyzing time series data). The focus of survey-type research is to
discover how executives of MNCs assess the political environment. The findings of survey-type research by Aharoni (1969), Basi (1963), Bass, McGregor, and Walters (1977), Kobrin et al. (1981), and Root (1968) present consistent results: MNCs consider political stability as the most decisive non-economic determinant of foreign direct investment decision.

In contrast, the econometric-type studies provide inconsistent and inconclusive results. Bennett and Green (1972), Brewer (1983), Green and Cunningham (1975), Kobrin (1976), and Thunell (1977) report that political stability is not an important variable in allocating funds to foreign countries. Agodo (1978), Maclayton, Smith, and Hair (1980), Root and Ahmed (1978, 1979), and Schneider and Frey (1985) find that political stability is a major determinant of FDI decision by MNCs.

Levis (1979) reports that the negative relationship between political risk and investment flow is only valid for developing countries. Nigh (1985) and Schollhammer and Nigh (1984) investigate the importance of inter- and intra-nation conflict and cooperation on foreign direct investment decisions by MNCs. Their research reports two findings. For developing countries, both inter- and intra-nation conflict and cooperation are important factors in allocating foreign direct investment. However, only inter-nation conflict and cooperation are important variables in deciding
foreign direct investment in developed nations. The findings of Fatehi-Sedeh and Safizadeh (1988) suggest a negative relationship between sociopolitical instability and U.S. MFDI. However, their research shows that MNCs do not react immediately to the political change in the host countries. In addition, the four sociopolitical variables of "protest demonstration," "successful assassinations," "political strikes," and "political executions" are positively related to U.S. manufacturing foreign direct investment decisions. They provide plausible explanations for these results.

The inconsistencies among econometric-type research may be caused by the following reasons. First, a composite political index (e.g. Conflict and Peace Data Bank Index, the Russett measure, and Feieraband and Feieraband Index) may not be an appropriate measure for political risk because MNCs may not analyze the political environment in any systematic manner, as they were assumed to do. Numerous studies report that the subjective perception of executives (Root 1968), media reports and reports from a company's employees in foreign countries (Zink 1973), and a company's executives located abroad (Keegan 1974) are important external sources for the assessment of political risks. Hays (1971) and Nehrt (1973) find that MNCs' political risk

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3See Fatehi-Sedeh and Safizadeh (1989) for detailed explanations.
assessment is unsystematic and unsophisticated. Therefore, it is likely that MNCs may not use sophisticated political indices.

Second, Bunn and Mustafaoglu (1978, p.1558) define a political risk event as "any outcome in the host country, which if it occurs, would have a negative impact on the success of the venture." This definition suggests that changes in the political environments of the host country may not constitute a risk unless these changes affect business activities of MNCs (Robock 1971). Therefore, the foregoing indices developed from political scientists' perspective may not provide the answers needed for business people (Bennett and Green 1972; Robock 1971) in evaluating a host country's political instability, because business people are interested in the economic consequences of political changes (Overholt 1982). In addition, the applicability of these composite indices to FDI decisions must be different because they are deduced from different methodologies (Green and Korth 1974).

Third, it seems that an inherent bias exists in the studies which include both developing and developed countries in investigating the impact of political risks on FDI since developed countries are generally perceived as politically stable by MNCs regardless of the facts (Levis 1979). Therefore, the results of those studies might be distorted even though a negative relationship exists between
political instability and the FDI inflow into developing countries. Empirical research supports this argument. The consistent negative relationship between the flow of FDI in developing countries and the measures of political risk has been established (Agodo 1978; Levis 1979; Nigh 1985; Schneider and Frey 1985; Schollhammer and Nigh 1984).

Fourth, assessment of the political environment without consideration of the expected return on investments may be inappropriate (Fatehi-Sedeh and Safizadeh 1989). MNCs might engage in foreign direct investment in the countries characterized by high political risks if a higher rate of return on investment is to be expected.

In summary, it can be concluded that, contrary to common expectations, empirical research has failed to provide a consistent inverse relationship between the flow of foreign direct investment and measure of political instability of the host country. However, a negative relationship between the flow of foreign direct investment and political instability has been consistently noticed for developing host countries (Agodo 1978; Levis 1979; Nigh 1985; Schneider and Frey 1985; Schollhammer and Nigh 1984).

Culture, geographical distance, and infrastructure

Other host country location-specific factors, such as cultural similarity, geographical distance, and infrastructure, have also been investigated (Agodo 1978;
Green and Cunningham 1975; Maclayton, Smith, and Hair 1980; Root and Ahmed 1978, 1979). However, the results of previous empirical research that investigated these variables are inconsistent.

The host country’s cultural similarity (measured by Buck and Jacobson’s rating) and geographical proximity to the United States (air travel distance of capital city from New York, San Francisco, and Houston, whichever is closest) have been investigated, but found to be insignificant determinants of U.S. manufacturing FDI (Green and Cunningham 1975). However, Maclayton, Smith and Hair (1980) report that cultural unity and physiographic barriers are important determinants of FDI by U.S. health care products industry. Agodo (1978) and Root and Ahmed (1978, 1979) report infrastructure of a host nation is an important determinant of FDI. But Green and Cunningham (1975) find that infrastructure is not an important determinant of FDI.

The extent of urbanization is a significant determinant of FDI inflow in developing countries (Root and Ahmed 1978, 1979). More specifically, they find that developing countries most attractive to foreign investors are far more urbanized than other developing countries. The extent of urbanization is measured by the percentage of population living metropolitan area.

See Maclayton, Smith, and Hair (1980) for the detailed information of measuring cultural unity and physiographic barriers.


Location Advantages of the Home Country

The influence of home country characteristics on foreign direct investment has received little attention in the literature despite its potential explanatory power (Tallman 1988). Dunning (1981b) argues that foreign direct investment is positively related to a home country's stage of economic development, measured in terms of GNP per capita. Tallman (1988) contends that higher levels of economic development produce firms equipped with resources and skills that can compete in foreign markets. He uses GDP per capita as a measure of economic development. The findings of Dunning (1981b) and Tallman (1988) support the foregoing arguments. Dunning (1981b) reports that a country's international investment position is positively related to its level of economic development. Tallman (1988) finds a positive relationship between foreign direct investment outflows from a country and GDP per capita of the country.

Home country political conditions also seem to influence FDI decisions. Increased political instability of the home country may result in an unfavorable national environment for domestic investment and produces an increase in outward manufacturing FDI (Tallman 1988). Some empirical evidence supports this contention. Stopford (1980) finds that the political movement toward the left increases the FDI by German MNCs. Arpan, Flowers, and Rick (1981) state
that political instability in Europe has motivated European MNCs to invest in the United States. Tallman (1988) reports a negative relationship between the cooperative political environment\(^5\) in a home country and its FDI outflow.

The Eclectic Theory

The eclectic theory of foreign direct investment pioneered by Dunning (1981a) is based on three determinants of foreign direct investment: ownership advantages, internalization advantages, and location advantages. Ownership advantages explain an MNC's ability to compete successfully with indigenous firms. For an MNC to compete successfully with indigenous firms in a particular foreign market, it must possess ownership advantages sufficient to outweigh the costs of servicing an unfamiliar or distant environment (Hirsch 1976). Internalization advantages explain why a firm chooses to exploit foreign markets through foreign direct investment rather than through contractual agreement with foreign producers. Internalization occurs if an imperfect market situation exists for intermediate and intellectual products (knowledge). Finally, location advantages explain the factors determining the location of production outside its

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\(^5\)Tallman (1988) used the COPDAB records to measure the cooperative political environment. The COPDAB is publicly available sources that can be used to estimate the levels of domestic cooperation during the 1948-1978 period. See Azar (1980) for detailed description of the COPDAB.
home country. The eclectic theory of FDI integrates ownership advantages, internalization advantages, and location advantages, since none of these advantages alone can satisfactorily explain the propensity of a firm to engage in foreign direct investment (Dunning 1980, 1981a).

The underlying hypothesis of the eclectic theory is that a firm will engage in international production if the following three conditions are met (Dunning 1981a, p. 79):

1. A firm must possess net ownership advantages vis-a-vis firms of other nationalities in servicing a particular foreign market. The ownership advantages, which are created by the firm, largely take the form of the possession of intangible assets (i.e., patents, brand name, or trade mark) that are, at least for a period of time, exclusive to the firm possessing them.

2. Assuming condition (1) is satisfied, it must be more beneficial to the firm possessing these advantages to use them itself rather than sell or lease them to foreign firms.

3. Assuming conditions (1) and (2) are satisfied, it must be more profitable to the enterprise to combine these assets with at least some factor endowments outside its home country; otherwise foreign markets would be served by exports and domestic markets by domestic production.
If this line of reasoning underlying the theory is valid, then the greater the ownership advantages of an enterprise, the more incentive a firm has to internalize these advantages; and the greater the attractiveness of a foreign production base in exploiting ownership advantages, the more likely the firm is to engage in foreign direct investment (Dunning 1980, 1981a, 1981b). Then, the tendency of a particular country to engage in foreign direct investment depends on the extent to which "its enterprises possess ownership advantages and internalization advantages, and the locational attractions of its endowments compared with those by other countries" (Dunning 1981a, p. 79).

Despite the logical arguments of the eclectic theory and some supporting empirical evidence (Dunning 1980, 1981a, 1981b; Dunning and McQueen 1982), internalization theorists have criticized the eclectic theory for "double counting" of ownership advantages (Buckley 1988; Casson 1986; Rugman 1985). Casson (1986, p. 45) points out that "it is the markets that are internalized and not the advantages themselves." Therefore, Casson (1986) contends that the internalization of an external market for monopolistic advantages is a special case of the internalization in general. In this sense, the internalization theory includes an ownership advantage. Therefore, the internalization theorists argue that location and internalization advantages are necessary and sufficient to explain the existence and
growth of the multinational corporations. In response to this criticism, Dunning (1988, p. 3) asserts that "it is not only useful but logically correct to distinguish between the capability of MNEs to internalize markets, and their willingness to do so." This argument means that an MNC’s capability to internalize market is its ownership advantage. However, Itaki (1991) rebuts Dunning’s (1988) contention. He states that the advantages of a firm are derived from the economies and market power of internalization over the externalization. Therefore, he contends that no place is left to be filled by ownership advantages. He gives a more comprehensive criticism of the eclectic theory for the following reasons.

First, as did the internalization theorists, he argues that ownership advantage is redundant because (1) it originates from internalization and integration and (2) it does not allow for the cost of its acquisition. Itaki (1991, p. 448) states:

The 'ownership advantage' is an economic asset, the value which is equal to the capitalized value of expected future super-normal profits. Thus, after paying all the factor inputs, super-normal profit results simply from the firms' organizational power of internalization and integration.

Itaki (1991) calls the creation of internal economies under common ownership and control as integration because it involves changes not only in ownership structure, but also in controlling and management structure. Thus, integration is a dynamic concept of internalization. He contends that internal transaction costs can be reduced to zero in the case of perfect integration.
Second, Itaki contends that we cannot separate ownership advantage from location advantage since the ownership advantage in economic terms (monetary terms) is influenced by location factors. He argues that the ownership advantage in economic terms cannot be determined prior to the selection of production location because a firm's ownership advantage (i.e., technology and marketing skills) may or may not turn out to be advantageous depending on the cost of production which differs between locations.

Third, Itaki criticizes the ambiguity of the location advantage. He states that the theory fails to distinguish between real terms and nominal terms of the location advantage despite a comprehensive list of location factors.

Fourth, Itaki contends that it is possible for theorists to invent determinants of FDI freely as long as they fall under one of three advantages since the eclectic theory does not point out the most dominant determinants of FDI. He argues that factors of the advantage in the eclectic theory should be "as non-substitutable as possible and remain relatively few in number" (Itaki 1991, p. 457) in order to have a strong explanatory power.

Summary of FDI Theories

This section reviews literature on FDI theories relevant to the proposed research. In addition, table 3 provides the summary of previous empirical findings on these
FDI theories. The empirical findings are exclusively based on FDI behavior of the traditional MNCs. Based on this review, we can make the following summaries.

First, the monopolistic advantage theory argues that a firm must possess monopolistic advantages before it engages in foreign production. Superior technology, sophisticated marketing skills, and firm size seem to be the most important sources of monopolistic advantages. The major weakness of this theory is its failure to consider cognitive market imperfections.

Second, the internalization theory argues that MNCs engage in foreign production not to exploit their advantages, but to substitute inoperable and inefficient external market systems for an internal market. In other words, MNCs make foreign direct investment to improve efficiency of transferring their advantages. However, internalization may not be needed if MNCs do not possess monopolistic advantages. The tautological nature of this theory should be controlled in order for it to be tested empirically. In addition, this theory must specify transaction cost functions and measure them.

Third, MNCs are attracted by host country-specific factors. Market size, measured in terms of GNP, per capita GNP, GDP, or per capita GDP, is the major determinant of foreign direct investment. However, the impact of population size, market growth rate, and political stability
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<td>Scaperlanda and Mauer (1969), Nigh (1985)</td>
</tr>
<tr>
<td>Population size</td>
<td>+</td>
<td>Kobrin (1976), Agodo (1979)</td>
</tr>
<tr>
<td></td>
<td>ns</td>
<td>Green and Cunningham (1975)</td>
</tr>
<tr>
<td></td>
<td>ns</td>
<td>Bennett and Green (1972), Green and Cunningham (1975), Kobrin (1976), Thunnel (1977), Brewer (1983)</td>
</tr>
</tbody>
</table>

Note: "ns" = No significant relationship
"+" = Positive relationship
on FDI is not conclusive. Some studies report that these factors have significant positive impact on FDI; but other studies find that these variables are not important determinants of FDI.

Fourth, the eclectic theory seems to be the most sophisticated FDI theory because it incorporates ownership advantages, internalization advantages, and location advantages. However, an empirical test of the theory is very difficult because of its limitations.

The Characteristics of Third World MNCs

Multinational corporations are traditionally depicted as large firms originating in advanced nations, such as the United States, Germany, Britain, and Japan. They tend to have superior technology and sophisticated marketing skills which are regarded collectively as the most powerful engine of the proliferation of multinational corporations (Lall and Siddharthan 1982). However, Third World multinational corporations challenge this conventional wisdom since the characteristics of these new entities are quite different from those of the traditional MNCs in many ways. Some important distinctive attributes of the new MNCs are as follows.

First, Third World MNCs are corporations based in developing countries that have large industrial sectors, including Argentina, Brazil, Mexico, Hong Kong, Korea,
India, Singapore, and Malaysia (Wells 1981). Rarely does foreign direct investment come from firms based in the Middle East and Africa (Wells 1983). This fact is consistent with Dunning's (1981b) hypothesis suggesting that a developing country should reach a certain level of economic development and technological competence before it can produce multinational corporations.

Second, the technologies developed by Third World MNCs are labor-intensive, owing to small-scale manufacture that often results from small home country markets (Wells 1983). As Wells (1977, p. 140) states, "the adaptation of technology to small-scale manufacture results in a technology that is more labor-intensive than the large-scale technology employed by most multinationals." Also, firms in developing countries typically tend to produce less sophisticated, low-technology products due to the relatively low level of income (Lecraw 1981). Moreover, most developing countries have a relatively abundant and inexpensive labor force. This labor force is the strength of developing country firms and supports their ability to manufacture at small volume with low unit cost (Wells 1983). In contrast, the traditional MNCs do not allocate scarce management time on developing low-cost production technology (Wells 1978) because their monopolistic advantages are built on technological know-how and/or marketing skills which enable them to avoid price competition (Wells 1977). Even
though some of Third World MNCs engage actively in research and development, their R&D activities emphasize the assimilation and adaptation of imported technology rather than the innovation of new technology (Lall 1983). Moreover, the fact that Third World MNCs have technical strengths based on R&D efforts does not signify that these efforts have provided them a competitive edge over the traditional MNCs.

Empirical research, although limited, supports the view that technologies employed by Third World MNCs are more labor-intensive and less R&D-intensive than the technologies employed by the traditional MNCs. After analyzing FDI in twelve industries in Thailand, Lecraw (1977) reports that one major motivation of Third World MNCs that invested in Thailand is to exploit their experience in labor-intensive technology. He also finds that developing-country MNCs use more labor-intensive technology than either Thai firms or multinational corporations from advanced nations. Third World MNCs, in general, are not active in industries characterized by high-technology. Wells (1979) finds that Third World MNCs invested in Indonesia mainly in industries characterized by low-R&D expenditure. Lecraw (1981) reports that multinationals from Asian countries that make FDI in the five nations of the Asian region tend to use more labor-intensive and low-R&D technology compared to their counterparts from developed nations. In addition, he
reports that Third World MNCs compete at the low-end market characterized by little product differentiation, low R&D-intensity, price-sensitivity, and low quality even when they compete against the traditional MNCs in the same industry. Giddy and Young (1982) also state that a significant amount of foreign direct investment by Third World MNCs is concentrated in basic low-technology industries. The above empirical findings suggest that FDI from Third World MNCs will more likely come from industries characterized by labor-intensive technology, not from those characterized by R&D-intensity.

Third, unlike their counterparts from the advanced countries, Third World MNCs lack expertise in selling marketing-intensive, branded products (Lecraw 1977). In fact, there are few Third World MNCs that have developed well-known brand names (Lall 1983). They lack marketing skills to compete successfully and survive in industries dominated by competitors with sophisticated marketing skills (Wells 1977, 1978). Rather, Third World MNCs are more likely to succeed and survive in industries dominated by price competition since their labor-intensive technology is likely to give them a competitive edge in foreign markets where price competition is a viable marketing strategy (Wells 1977).

Empirical research suggests that most foreign investors from developing countries rely heavily on one
marketing tool, price (Lall 1983; Lecraw 1981; Wells 1983).
Wells (1983) finds that Third World MNCs have strengths
mainly in industry sectors characterized by price
competition rather than product differentiation, although he
finds some exceptions. He also finds that developing
country MNCs are more likely to invest in industries
characterized by low advertising expenses. Lall (1983)
reports that Indian MNCs have their main advantages in price
competition for undifferentiated products. Lecraw’s (1981)
analysis of 153 firms which make FDI in the Asian countries
reports that the traditional MNCs spend, on the average,
significantly more on advertising than Third World MNCs.
Moreover, the undifferentiated, low technology goods
produced by Third World MNCs do not seem to require
sophisticated marketing skills to compete successfully in
the foreign markets.

Some may argue that this statement is outdated because
there are several developing country MNCs which have well-
known brands, such as Goldstar, Samsung, Daewoo, and
Hyundai. However, there is no evidence that these MNCs
compete head on with the traditional MNCs based on product
differentiation. Rather, they focus on market segments
which are sensitive to price. For example, the marketing
strategy of Hyundai in the U.S.A. has been focused not on
superior product features, but on affordable price. The
advertising theme of Hyundai during the 1991-1992 NBA
playoffs reflects Hyundai's marketing strategy very well. The advertising emphasizes that consumers can buy three Hyundai cars for the price of one Toyota Camry. In fact, the structured interviews of 16 large Korean manufacturing firms by Kumar and Kim (1984) report that price advantage is the most important firm-specific advantage of Korean MNCs.

Fourth, even though there are a number of exceptions, Third World MNCs tend to invest in countries whose level of economic development is the same or less than that of the home country (Wells 1981, 1983) for several reasons. For example, the smaller the technological difference between the investing country and the host nation, the easier it is to transfer technology (Giddy and Young 1982). Therefore, Third World MNCs' technology and products seem to be better suited for the needs of other developing countries that also have labor-intensive environments. In addition, small-scale, labor-intensive technology of Third World MNCs can be an advantage only in countries with home market conditions similar to those of Third World MNCs. Also, Third World MNCs, in general, do not possess "experience with highly sophisticated, capital-intensive, large-scale technology necessary for efficient production in the developed countries" as Lecraw (1981, p. 446) states.

Fifth, a joint venture is the dominant ownership pattern for Third World MNCs in manufacturing foreign direct investments (Jo; 1991; Wells 1983). Since they do not
possess sophisticated marketing skills and technological advantage to exploit in foreign markets, they need not worry about the risk of dissemination of firm-specific know-how, the loss of quality, and the loss of monopoly profits which might occur through a joint venture formation. Therefore, the new multinational corporations prefer joint ventures because they need local partners in order to acquire marketing expertise and knowledge of the local economic and political environment (Lecraw 1981). Wells’ (1983) study reports that 90 percent of manufacturing subsidiaries owned by developing country multinational corporations used joint venture as an entry mode. In contrast, his study reports that only 40 percent of manufacturing subsidiaries owned by U.S. MNCs used joint venture. Thee (1981) also reports that MNCs from India prefer joint ventures with host country firms to wholly owned subsidiaries.

The findings of previous research on Third World MNCs should be interpreted with caution, since the data used in previous research are unreliable and limited because the FDI figures released by developing-country governments are quite incomplete. Rather, they should be treated as foundation for a more rigorous framework within which the FDI behavior of Third World MNCs can be investigated.
Summary of Chapter 2

Chapter 2 reviews literature relevant to this study. Based on this review, the following conclusions can be drawn. First, the existing FDI theories agree that a firm must possess ownership-specific advantages before it engages in foreign production. However, it seems that Third World MNCs do not have ownership-specific advantages based on R&D and/or advertising as do their counterparts from developed countries. Rather, Third World MNCs seem to thrive based on their ability to offer low to medium quality products at lower prices using their labor-intensive technology.

Second, the economic conditions of a host country, especially market size (i.e., GNP) of the host country, have a positive impact on FDI inflows to the country. Additionally, the extent of urbanization has a positive impact on FDI inflow into developing countries. But, the studies of the impact of political instability, cultural similarity, geographic distance, and infrastructure on FDI are inconclusive.
CHAPTER III

RESEARCH DESIGN

Introduction

As stated in chapter 1, the objective of this research is to investigate the influence of firm-related and host country-related factors on the FDI activities of Korean manufacturing MNCs. This chapter discusses the research hypotheses, the operationalization of the variables, the selection of the research units, the data source and sample, and the statistical methods.

First, the research hypotheses are generated based on the FDI theories as well as the findings of previous studies that investigated the FDI behavior of Third World MNCs and the traditional MNCs. In addition, figure 1 provides an overall picture of the hypothesized relationship between the magnitude of FDI by Korean manufacturing MNCs and firm- and location-specific variables. Second, the data source and sample are discussed. Third, the dependent variables and independent variables are operationalized. Finally, an appropriate statistical model is developed to test the research hypotheses.
Hypotheses on Firm-specific Determinants of FDI

The predominant foreign direct investment theories contend that a firm must possess "monopolistic" or "ownership" advantages before it engages in foreign production. These advantages include advanced technology and brand images created by intensive investment in R&D and advertising. Therefore, we could expect that the possession of monopolistic advantages affects an MNC's capability to make FDI. Previous empirical research strongly supports these arguments.

One critical limitation of these empirical studies is their use of aggregated industry-level FDI data even though FDI theories primarily purport to explain the propensity of FDI by individual firms. Accordingly, most previous empirical research identifies the characteristics of industry sectors that have a greater predominance of FDI activities than others. It may be assumed that the variables that are used to measure ownership-specific advantages at the industrial level, such as R&D-intensity and advertising-intensity, could capture them at the individual firm level. Then, it is logically sound to expect that firms with superior technology and sophisticated marketing skills are more likely to engage in foreign production than firms without these assets.

We might also expect that the magnitude of FDI among individual multinational corporations could be different.
This is because the level of a firm's rent-yielding assets (monopolistic or ownership advantages) may not be distributed evenly across firms even in the same industry, depending on their initial and subsequent strategic choice (Caves 1984; Caves and Porter 1977). Therefore, we can argue that the firms with superior monopolistic advantages will make larger amounts of foreign direct investment than the firms with less favorable monopolistic advantages (Kimura 1989).

This research overcomes a major limitation of the previous research by using firm-level FDI data and financial statements. In this research, firm-level data allow the investigation of the factors that influence the magnitude of FDI by individual Korean MNCs.

Hypothesis 1: R&D-intensity

Previous research on Third World MNCs, although limited, suggests that the R&D-intensity of Third World MNCs has no significant impact on their FDI because they do not possess technological advantages to exploit in foreign markets. This contention seems to be tenable for Third World MNCs investing in developing countries as well as in developed countries. The findings of previous investigations suggest that Third World MNCs are not prevalent in industries characterized by high R&D-intensity (Jo 1981; Lecraw 1977, 1981; Wells 1977, 1978, 1983),
although these studies investigate only the FDI activities of Third World MNCs in developing countries. It is unlikely that Third World MNCs can enjoy technological advantages in R&D-intensive industries in developed countries because developed-country firms tend to have more advanced technologies than Third World MNCs.

It may be thought that these arguments do not hold for MNCs from newly industrialized countries (NICs) such as South Korea. For example, it could be argued that Korean MNCs have technological advantages in R&D-intensive industries over local firms in developing countries even though they do not enjoy these advantages in developed nations. However, this argument is not tenable for the following reason.

Third World MNCs encounter two principal types of competition in developing countries: firms indigenous to the country in which they are investing and multinationals from the industrialized nations (Dunning 1981a). In fact, developing countries receive more FDI from developed nations than from other developing nations (Tolentino 1990). Therefore, even in developing countries, Third World MNCs can hardly enjoy technological advantages because they have to compete against the traditional MNCs.

Empirical findings support the foregoing arguments. Wells' (1983) comparative study of FDI inflow in Brazil, Indonesia, Taiwan, the Philippines, and Mauritius points out
that Third World MNCs are more likely to invest in less R&D-oriented industries than their counterparts from the industrialized nations. The study of sixteen large Korean manufacturing firms by Kumar and Kim (1984) indicates that Korean firms have lower technology levels than firms from developed countries in the same industry, with advantages in adapting mature technology to other developing countries. Tallman and Shenkar (1990) also report that small Korean MNCs rely heavily on adapting mature technology in R&D-intensive industries.

Therefore, it can be argued that Third World MNCs can hardly compete in R&D-intensive industries, even in developing countries. If Third World MNCs want to compete with their counterparts from advanced nations in the same R&D-oriented industry, the only possible way seems to be to compete at the low end of the market characterized by low technology, low-to-medium quality, and price-sensitivity, as the literature suggests. The proposed research hypothesizes that the R&D-intensity of Korean manufacturing MNCs has no significant impact on the magnitude of manufacturing FDI by the firms. R&D-intensity is the ratio of R&D expenditure to total sales.

\[ H_1: \text{The magnitude of FDI by Korean manufacturing MNCs is independent of their R&D-intensity.} \]
Hypothesis 2: Advertising-intensity

Unlike their counterparts from the advanced countries, Third World MNCs do not have ownership-specific advantages based on product differentiation created by advertising, i.e., brand identities. Typically, Third World MNCs lack financial resources (Giddy and Young 1982) and marketing skills (Wells 1977, 1978) needed to compete successfully and to survive in industries dominated by competitors with strong brand images. Moreover, the undifferentiated low-quality, low-technology, labor-intensive goods produced by Third World MNCS do not seem to require a substantial investment in advertising to create brand identities in order to sell those products.

Empirical studies support the foregoing arguments (Lecraw 1977, 1981; Wells 1977, 1978, 1983). These studies suggest that Third World MNCs have a tendency to invest in industries characterized by low advertising expenditure. The findings also suggest that Third World MNCs rely heavily on one marketing tool--price.

The previous empirical findings could be disputed as outdated because several Third World MNCs apparently have well-known brands, such as Goldstar, Samsung, Daewoo, and Hyundai. Also, they may further argue that these Third World MNCs could have advantages based on marketing skills over indigenous firms in developing countries, although they may not enjoy these types of advantages in developed
countries. These contentions are not really tenable for the following reasons. First, the marketing skills of Third World MNCs do not seem to be sophisticated enough to compete head-on with the traditional MNCs based on brand images (Lecraw 1981), although there are a few exceptions. Even when Third World MNCs make FDI in marketing-sensitive industries alongside the traditional MNCs, Third World MNCs seem to focus on market segments which are sensitive to price (Wells 1983). Second, in developing countries, Third World MNCs should compete, not only with local firms, but also with the traditional MNCs, which tend to have strong brand identities. Thus, for Third World MNCs, marketing strategy based on price seems to be a more viable choice than that based on brand images.

In summary, it can be concluded that product differentiation created by advertising is not a major determinant of manufacturing FDI by Korean MNCs. Therefore, we can hypothesize that the advertising-intensity of Korean MNCs has no significant impact on the magnitude of their manufacturing FDI. Advertising-intensity is the ratio of advertising expenditure to total sales.

$H_2$: The magnitude of FDI of Korean manufacturing MNCs is independent of their advertising-intensity.
Hypothesis 3: Capital Intensity

The capital intensity of a firm may have an impact on foreign direct investment, because it represents the amount of capital necessary to establish minimally efficient production facilities (Kim and Lyn 1987; Lall 1980). Therefore, it can be hypothesized that the magnitude of FDI by Korean MNCs will increase with increasing capital intensity. Furthermore, this relationship becomes stronger with increasing firm size because a large firm has more resources to invest. Capital intensity is measured by fixed assets divided by sales. Firm size is measured by the total assets of the investing firm.

H_{3a}: The capital intensity of Korean manufacturing MNCs has a positive impact on the magnitude of their FDI.

H_{3b}: The positive relationship between capital intensity and the magnitude of FDI becomes stronger with increasing firm size.

Hypothesis 4: Membership in A Conglomerate

Membership in a conglomerate group may provide various ownership-specific advantages (Lall 1983) for several reasons. First, the membership provides both financial backing and greater ability to bear risk and losses because of the strong economic power of the conglomerate group in
the home country. Firms belonging to the top thirty Korean conglomerate groups competed in 873 product categories in 1987. Among these 873 product categories, those firms' market share was over 80 percent in 103 product categories, 40 to 80 percent in 232 product categories, and 20 to 40 percent in 291 product categories (Lee and Lee 1990).

Second, a firm belonging to a conglomerate group may be able to access a variety of technologies and management and other skills because a conglomerate group, in general, is widely diversified. For instance, the top ten Korean conglomerate groups had a total of 303 companies in 1990, and they produced an average of 89 different product items in 1987 (Lee and Lee 1990). Therefore, it can be hypothesized that membership in a conglomerate group has a positive impact on the magnitude of FDI by Korean manufacturing MNCs.

H$_4$: The magnitude of FDI by Korean manufacturing MNCs is greater if the MNCs are members of a conglomerate group.

**Hypotheses on Location-specific Determinants of FDI**

Location-specific factors of the host countries refer to a wide range of environmental conditions and characteristics of a particular host country, such as the
political climate, regulatory conditions, market characteristics, availability of production factors, and relative cost of production, which attract FDI inflow into the country. Therefore, we must consider location-specific factors of the host country to explain the foreign direct investment behavior of MNCs.

In this research, location-specific factors of the host countries are investigated in order to understand the impact of those factors on the magnitude of manufacturing FDI by Korean MNCs. Empirical studies in this area have investigated why certain countries receive more foreign direct investment than other countries. These studies strongly support the underlying theoretical arguments of the theory that MNCs tend to invest more in host countries that have attractive market conditions, such as large market size, rapid market growth rate, and stable political environment. Previous empirical research, however, did not investigate the impact of location-specific factors on FDI by Third World MNCs.

Hypothesis 5: Per capita GDP

Market size is important for the allocation of manufacturing foreign direct investment. Investment in manufacturing usually requires a certain minimum plant capacity and output level in order to support efficient operations (Agodo 1978). Previous empirical studies on the
traditional MNCs suggest that market size, measured in terms of either GNP or GDP, is an important determinant of foreign direct investment. The higher the GDP per capita, the better is the market potential of a host nation. Therefore, it can be hypothesized that the market size of the host country has a positive impact on the magnitude of manufacturing FDI by Korean MNCs.

\[ H_5: \text{The market size of the host country, in terms of per capita GDP, has a positive impact on the magnitude of foreign direct investment of Korean manufacturing MNCs.} \]

Hypothesis 6: GDP Growth

Market growth is an indicator of a good future developmental potential. Although the empirical evidence is not strong, it is reasonable to assume that a country’s good development potential positively affects the FDI decisions of Korean manufacturing MNCs. Thus, it can be hypothesized that the GDP growth rate of the host country has a positive impact on the magnitude of FDI by Korean manufacturing MNCs.

\[ H_6: \text{The market growth rate of the host country, in terms of GDP growth rate, has a positive impact on the magnitude of foreign direct investment of Korean manufacturing MNCs.} \]
Hypothesis 7: Population Size

The evidence concerning the impact of population size on foreign direct investment is inconclusive. However, population size might be important for the investors of low-priced consumer products because a large population represents a relatively high aggregate purchasing power (Agodo 1978).

Third World MNCs have advantages in manufacturing low-priced products compared to their counterparts from advanced nations (Wells 1983). Therefore, population size may have a significant impact on the FDI decisions of Third World MNCs, especially in developing countries where per capita GNP or GDP is relatively low. Population size may also have a positive impact on the foreign direct investment of Third World MNCs in developed countries. Large populations may translate into large demand for the type of low-priced products that Korean MNCs market. Thus, it can be hypothesized that the population size of a host country should have a positive impact on the magnitude of FDI of Korean manufacturing MNCs.

H₇: Population size of a host country should have a positive impact on the magnitude of foreign direct investment of Korean manufacturing MNCs.
Hypothesis 8: Political Stability

Multinational corporations are affected by the different political environments in which they operate. Therefore, a sophisticated, careful analysis of the political environment of potential host countries for a proposed foreign direct investment is required by a multinational corporation because the consequences of political changes in the host country can be very detrimental to MNCs. The consequences can range from the uncertainty and mild inconvenience of business operations to nationalization and violence.

Political stability is, therefore, one of the host country environmental variables that is the most extensively investigated (Agodo 1978; Aharoni 1966; Bennett and Green 1972; Brewer 1981; Chase, Kuhle, and Walther 1988; Fatehi-Sedeh and Safizadeh 1989; Green and Cunningham 1975; Green and Smith 1972; Kobrin 1976, 1978, 1979; Levis 1979; Nigh 1985; Root 1968; Root and Ahmed 1978, 1979; Schneider and Frey 1985; Schollhammer and Nigh 1984). Intuitively, it may be thought that a country in which there is political instability should be less attractive to foreign investors than a country offering political stability. However, empirical evidence fails to provide unequivocal support for this notion.

The empirical studies can be grouped into two categories: survey-type (mail survey with questionnaire to
executives of MNCs) and econometric-type (statistical methods developed for analyzing time series data or cross sectional data) studies. The findings of survey-type studies provide a consistent result: MNCs consider political stability to be one of the major determinants of FDI. However, the econometric-type studies fail to provide a consistent positive relationship between the flow of foreign direct investment and the level of political stability. The empirical studies in this area agree on one trend. That is, the flow of FDI and the level of political instability are negatively related for investment in developing countries (Agodo 1978; Levis 1979; Nigh 1985; Schneider and Frey 1985; Schollhammer and Nigh 1984).

Political stability should have a significant effect on the FDI decisions of Third World MNCs for several reasons. First, the political condition of the home countries of Third World MNCs tends to be less stable than that of home countries of the traditional MNCs. Thus, Third World MNCs may want to invest in countries with greater political stability than that of the home country.

Second, Third World MNCs have less bargaining power over the host nations than the traditional MNCs do. Third World MNCs lack the ability to offer an advanced technology that host countries cannot acquire in the open world market (Doz and Prahalad 1980; Fagre and Wells 1982). Third World MNCs do not offer product differentiation based on
technology since their technology is old and well known in the world market. They do not bring a substantial amount of capital to the host country because the amount of FDI by Third World MNCs is typically small (Jo 1981).

Finally, Third World MNCs lack the efficient worldwide distribution channels that can control market access of the host nation firms. Therefore, it may be argued that Third World MNCs are more vulnerable to political change in the host nations because their special assets are easily replaceable compared to those of their counterparts from the developed nations.

For these reasons, political stability should have a significant positive impact on the magnitude of FDI Korean manufacturing MNCs. This study uses the Business Environment Risk Index (BERI S.A. 1991) as the measure of political risk for an MNC in a host country.

\[ H_2: \text{The political stability of a host nation should have a positive impact on the magnitude of foreign direct investment of Korean manufacturing MNCs.} \]

Model: Determinants of the Magnitude of FDI by Korean MNCs

Figure 1 explains the predicted impact of firm-related and location-related variables on the magnitude of FDI by
Korean manufacturing MNCs. This figure provides the overall picture of the hypothesized relationship between the dependent variable and independent variables. In addition, table 5 compares the predicted impact of firm- and host location-specific variables on FDI by Korean MNCs with the observed impact of these variables on the FDI of the traditional MNCs. This comparison provides some general insights into the differences between Third World MNCs and the traditional MNCs.

R&D-intensity and advertising-intensity of the investing firms are expected to have no significant impact on the magnitude of FDI. This prediction is contradictory to the findings of previous studies on the traditional MNCs. These studies consistently report that R&D- and advertising-intensity are major determinants of FDI of the traditional MNCs (Caves 1971, 1974; Graham 1978; Hirsch 1976; Kim and Lyn 1987; Lall 1980).

Capital intensity of the investing firm is predicted to have a positive impact on the magnitude of FDI. This prediction is consistent with the existing FDI theories and previous empirical results. Figure 1 shows that membership in a conglomerate positively influences the magnitude of FDI. This variable has not been investigated in previous research, although the possible positive impact is mentioned (Lall 1983). In addition, it is hypothesized that the positive relationship between capital intensity and the
magnitude of FDI will become stronger with increasing firm size.

Host country-specific factors, including per capita GDP, GDP growth rate, population size, and political stability, are expected to have a positive impact on the magnitude of FDI. Previous research on Third World MNCs did not investigate the impact of location-specific factors on the FDI activities of Third World MNCs. However, like their counterparts from developed countries, it is logical to assume that Third World MNCs invest more in countries that have attractive market conditions.
Figure 1
Determinants of FDI by Korean MNCs

Note: "ns" = No significant relationship
"+" = Positive relationship
"np" = No prediction
<table>
<thead>
<tr>
<th>Variables</th>
<th>Predicted Impact on Magnitude of FDI by Korean MNCs (present study)</th>
<th>Observed Impact on Magnitude of FDI by the traditional MNCs (based on prior studies)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Firm-related variables:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R&amp;D-intensity</td>
<td>Not significant</td>
<td>+</td>
</tr>
<tr>
<td>Advertising-intensity</td>
<td>Not significant</td>
<td>+</td>
</tr>
<tr>
<td>Capital intensity</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Cap. intensity x Firm size</td>
<td>+</td>
<td>Not available</td>
</tr>
<tr>
<td>Membership in a conglomerate</td>
<td>+</td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Location-related variables:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per capita GDP</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>GDP growth rate</td>
<td>+</td>
<td>Inconclusive</td>
</tr>
<tr>
<td>Population size</td>
<td>+</td>
<td>Inconclusive</td>
</tr>
<tr>
<td>Political stability</td>
<td>+</td>
<td>Inconclusive</td>
</tr>
</tbody>
</table>
Hypothesis on Different Firm Characteristics

Hypothesis 9: Labor-intensity

The previous arguments suggest that Third World MNCs tend to be labor-intensive firms because their prime competitive advantage over potential local and multinational competitors is their experience in using and adapting labor-intensive technology to produce undifferentiated, low-technology products at small volume with low cost (Diaz-Alejandro 1977; Jo 1981; Lecraw 1981). Empirical research, although limited, suggests that the technologies employed by Third World MNCs are more labor-intensive and less R&D-intensive than the technologies employed by the traditional MNCs (Jo 1981; Kumar and Kim 1984; Lecraw 1977; Wells 1983).

One major issue has gone unaddressed in previous empirical studies. By and large, these studies have investigated only the factors that determine FDI by Third World MNCs in developing countries. Although Third World MNCs tend to invest more extensively in developing countries (Jo 1981; Wells 1981, 1983), they also make foreign direct investment in developed nations.

The fact that Third World MNCs make investment both in developing and developed countries leads to an interesting question: Are Third World MNCs driven by qualitatively different features while investing in developed and developing countries? Dunning (1981a) argues that ownership
advantages of MNCs, generated in response to the home country market conditions, may not turn out to be advantageous in host countries having different market conditions. This is the reason why the traditional MNCs tend to invest more extensively in the relatively high-income countries, and vice versa.

In the same context, the small-scale, labor-intensive technology of Third World MNCs may not be advantageous in developed countries because these countries tend to have a highly skilled and expensive labor force. One may think that, in labor-intensive industries, Third World MNCs would serve developed countries’ markets through exports rather than FDI. Hence, the answer to the question seems to be that Third World MNCs may be driven by qualitatively different features while investing in developed countries. For these reasons, we can expect that Korean manufacturing MNCs which are investing in developing countries tend to be more labor-intensive than those engage in FDI activities in developed countries.

\[H_0: \text{Korean MNCs investing in developing countries are more labor-intensive than those investing in developed countries.}\]
Data Sources and Sample

Secondary data were used in this research. The information about Korean companies who have foreign subsidiaries was acquired from the Bank of Korea. Since the Foreign Exchange Control Department at the Bank of Korea approves and monitors FDI activities of Korean firms, data from the Bank of Korea provided the necessary information for this research. These included the name of the investment firm, the name of the host country, the exact amount of FDI made by Korean manufacturing MNCs to establish a foreign subsidiary, the name of foreign subsidiaries, the approval date, and the percentage of ownership for all Korean manufacturing MNCs that engage in FDI.

Financial data of individual firms, including R&D expenditure, advertising expenditure, sales, total assets, and fixed assets, were acquired from "Financial Report of Korean Companies" (Korean Investors Service, Inc. 1991). In addition, a conglomerate group membership was identified from the same source.

Although the above book has the most comprehensive coverage about Korean companies, it does not report the financial statements of all Korean firms. Korean Investors Service, Inc. reports financial statements of Korean firms that are audited by outside auditors. Therefore, the sample was limited to Korean manufacturing MNCs whose financial statements are reported by Korean Investors Service, Inc.
In addition, manufacturing foreign direct investment by Korean General Trading Companies was eliminated because FDI theories do not deal with those companies whose main business is importing and exporting.

Another interesting FDI activity by Korean MNCs involves the joint FDI ventures between two or more Korean firms. More specifically, in a number of cases, two or more Korean firms (mostly a general trading company and a manufacturing firm) jointly engage in foreign direct investment. In fact, sixty-nine joint FDI ventures between Korean firms were established between 1988 and 1990. One possible explanation for this is that a general trading company and a manufacturing firm engage in joint production abroad in order to pool their strengths. A general trading company has experience in international business, and a manufacturing firm has expertise in production. Joint FDI between two or more Korean firms was excluded from this research because FDI theories do not directly deal with this phenomena either.

One hundred and seventy-six manufacturing FDI cases were identified using the above mentioned criteria. Of these cases, 129 were in developing countries, and the rest were in developed countries. Developing and developed countries were classified based on the International Monetary Fund classification. Appendix 1 provides a list of developing and developed countries. If a Korean firm
established more than one foreign subsidiary, each subsidiary was treated as an independent observation. Because of this, the actual number of Korean manufacturing firms involved in this research was 134. Per capita GDP, GDP growth rate, and population size were obtained from "World Tables" (The World Bank 1992). However, the GDP data of "World Tables" are expressed in terms of constant local currency. Therefore, the conversion rate (an annual average exchange rate) was used to calculate the GDP of host countries in U.S. currency. Per capita GDP was measured by GDP over population. The measure of political risk was acquired from the Business Environment Risk Index (BERI S.A. 1991).

Operationalization of the Variables

This section discusses operationalization of the dependent and independent variables. First, variables related to Hypothesis 1 to 8 are to be operationalized. Then, the dependent and independent variables of Hypothesis 9 will be operationalized.

Variables Related to Firm-specific and Location-specific Hypotheses

Dependent Variable: Hypotheses 1 to 8

The dependent variable of this study is the magnitude of manufacturing FDI (MFDI) that an individual Korean MNC
made to establish a foreign subsidiary in a host country. The incremental investment after establishing a foreign subsidiary is not included because of data unavailability. This operationalization of the dependent variable is a major departure from previous studies, which typically used industry-level or country-level FDI data as the dependent variable.

**Independent Variables: Hypotheses 1 to 8**

The hypotheses related to the firm-specific determinants of FDI intended to probe the effect of R&D-intensity, advertising-intensity, capital intensity, the interaction between capital intensity and firm size, and membership in a conglomerate on the magnitude of FDI by a Korean manufacturing MNC.

R&D-intensity is measured by the ratio of R&D expenditure to sales of the investing firm. Advertising-intensity is measured by the ratio of advertising expenditure to sales of the investing firm (Horst 1972; Lall 1980; Wells 1983; Yu and Ito 1988). Capital intensity is measured by the ratio of fixed assets to sales (Erramilli and Rao 1993; Kim and Lyn 1987; Orr 1974). Firm size is measured by the total assets of the investing firm (Horst 1972; Yu and Ito 1988). A dichotomous variables is used to denote membership in a conglomerate group. The value is 1 if a firm belongs to a conglomerate group, 0 otherwise.
The hypotheses related to the location-specific determinants of manufacturing FDI intended to investigate the effect of per capita GDP (market size), GDP growth rate (market growth rate), population size, and political risk on manufacturing foreign direct investment. The present study uses the magnitude of manufacturing FDI that an individual Korean MNC made to establish a foreign subsidiary in the host countries (KMFDI) as a dependent variable. Table 6 provides an explanation of each variable and source of its measurement.

The per capita GDP of the host country a year prior to the investment is used as a measure of market size (Agodo 1978; Kobrin 1976; Root and Ahmed 1978). GDP growth rate is measured as the amount of change in the growth domestic product in the host nation from one year to another prior to the investment (Nigh 1985; Schollhammer and Nigh 1984). Population size is the population prior to the investment (Agodo 1978; Kobrin 1976).

The Business Environment Risk Information Index, published by BERI S.A., (1991), is used to measure political stability. This index is adopted for several reasons.

First, unlike other political indices rated by political scientists, this index is based on ratings by executives from companies, banks, and institutions with extensive international experience. Although political scientists are better equipped to rate political risk, the
index developed by political scientists may not "reflect the weights which businessmen would apply to specific events when evaluating a nation's political instability" (Bennett and Green 1972, p. 185). Therefore, the BERI seems to be superior to other indices in investigating the influence of political stability on FDI.

Second, the BERI index measures the three primary causes of risk for international corporations, including the Political Risk Index (PRI), the Operation Risk Index (ORI), and the Remittance and Repatriation Factor (R Factor). The focus of the PRI is wholly on socio-political condition of a country from the viewpoint of an international corporation. The objective of the ORI is to measure the climate of business operations. The ORI measures two variables. One variable is the degree to which nationals are given preferential treatment; the other variable is the general quality of the business climate, including the political environment for day-to-day business. The objective of the R Factor is to estimate a country's capacity and willingness for private foreign firms to convert profits and capital in the local currency to "hard" currency and transfer the funds. Forecasts of three measures of risk are integrated into the Profit Opportunity Recommendation (POR). The POR is based on a composite score derived from taking one-third of the ORI, PRI, and R Factor.
<table>
<thead>
<tr>
<th>Variable (Label)</th>
<th>Measurement</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Independent variables:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R&amp;D-intensity (R&amp;D)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advertising intensity (ADV)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital intensity (CAP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm size (SIZE)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Membership in a conglomerate (CONG)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dependent variable:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The amount of MFDI by a Korean MNC</td>
<td>the magnitude of MFDI that an individual Korean MNC made to establish a foreign subsidiary in a host country</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the ratio of R&amp;D expenditure to total sales of the investing firm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the ratio of advertising expenditure to sales of the investing firm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the ratio of fixed assets to sales of the investing firm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the total assets of the investing firm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the value is 1 if a firm belongs to a conglomerate group, 0 otherwise</td>
<td></td>
</tr>
</tbody>
</table>
Table 6-Continued

<table>
<thead>
<tr>
<th>Per capita GDP (GDP)</th>
<th>per capita GDP of a host country prior to the investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP growth rate (GDPGRO)</td>
<td>percentage of change in the domestic product in the host nation from one year to another prior to the investment</td>
</tr>
<tr>
<td>Population size (POP),</td>
<td>population size of a host country prior to the investment</td>
</tr>
<tr>
<td>Political stability (PSI)</td>
<td>Business Environment Risk Index (BERI)</td>
</tr>
</tbody>
</table>


The POR composite score is used in the present study because it seems to reflect business people's viewpoints better than the other three indices. The changes in the host country socio-political environments (e.g., riots, civil war, demonstrations, ideological changes) are political risk events for MNCs. But the consequences of those political changes (e.g., foreign exchange control, domestic price control, expropriation) that affect their profits or other business goals might be more important to MNCs, because some political changes may not have negative impact on their business activities. Therefore, the POR composite score is superior to the other three indexes because it considers the socio-political risks of a country as well as other operating risks for MNCs. The BERI is also one of the most popular political risk indexes frequently referred by the international business community (Friedman and Kim 1988). Larger the BERI index score, greater is the political stability of a host country.

Variables Related to the Hypothesis on Firm Characteristics

H0 investigates whether we can differentiate Korean firms investing in developing host countries from those investing in developed host countries based on the labor-intensity of a firm.

There is no direct way of measuring labor-intensity. However, as in earlier studies on Third World MNCs (Lecraw...
<table>
<thead>
<tr>
<th>Variable</th>
<th>Measurement</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variables:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group I</td>
<td>Foreign subsidiaries established in developing countries</td>
<td>1&amp;2</td>
</tr>
<tr>
<td>Group II</td>
<td>Foreign subsidiaries established in developed countries</td>
<td>1&amp;2</td>
</tr>
<tr>
<td>Independent Variables:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labor-intensity</td>
<td>Average assets per employee (Total assets/No. of employees)</td>
<td>3</td>
</tr>
</tbody>
</table>

1981; Wells 1981, 1983), this research uses average assets per employee (total assets/number of employees) as a proxy measure for labor-intensity. Specifically, we can state that the smaller the average assets per employee of a firm, the greater the labor-intensity of the firm. Table 7 summarizes operationalization of variables and their measurement related to hypothesis 9.

**Statistical Method**

Multiple regression is used to test the hypotheses concerning the magnitude of FDI. These hypotheses investigate the impact of firm-related factors and host country-related factors on the magnitude of manufacturing FDI by an individual Korean MNC, and multiple regression is an appropriate statistical method. The regression model is

\[
KMFDI = B_0 + B_1 R&D + B_2 ADV + B_{3a} CAP + B_{3b} SIZE*CAP
\]

\[
+ B_4 SIZE + B_5 CONG + B_6 GDP + B_7 GDPGRO + B_8 POP
\]

\[
+ B_9 PSI
\]

where KMFDI is the amount of manufacturing FDI by a Korean manufacturing MNC invested in a host country to set up a foreign subsidiary. Independent variables will be standardized in order to allow uniform measurement units.

A t-test is to be used to test \( H_9 \). Hypothesis 9 examines whether the average labor-intensity of Korean MNCs...
investing in developing countries is higher than that of Korean MNCs investing in developed countries. Therefore, a t-test is appropriate because the above hypothesis tests differences between two means.

The pooled-variance t-test will be used if the assumption of equal variances between two groups is met. Otherwise, the separate-variance t-test should be used. If the pooled-variance t-test is used when the population variances are not equal, the probability level associated with the statistic may be in error. The F value, which is the ratio of the larger sample variance to the smaller, tests whether the population variances are equal or not. If the observed significance level for the F-test is small, the hypothesis that the population variances are equal is rejected, and, thus, separate-variance test is the appropriate test.

**Summary of Chapter 3**

Chapter 3 discusses the research design relevant to this study. The design includes the generation of the research hypotheses, the data source and sample, the operationalization of the dependent and independent variables, and the statistical methods.

Theoretical and conceptual arguments are given for each research hypothesis, along with empirical findings. One critical argument of this research is that firm-specific
determinants of FDI by Third World MNCs may be different from the traditional MNCs. Specifically, this research argues that Third World MNCs lack monopolistic advantages created by R&D and advertising, as do their counterparts from the industrialized nations. The research hypotheses reflect the foregoing arguments.

The secondary data sources for the proposed research are explained specifically, and the criteria for selecting sample size is discussed. The dependent and independent variables are operationalized, and appropriate measurement for these variables are suggested. Finally, to empirically test the research hypotheses, multiple regression and t-test are selected as appropriate analytical methods. Chapter 4 will analyze the results of statistical tests of the research hypotheses.
CHAPTER IV

TESTING HYPOTHESES AND EMPIRICAL FINDINGS

Introduction

Chapter 3 discussed the research hypotheses along with the research sample, data sources, operationalization of dependent and independent variables, and analytical methods for testing the research hypotheses. This chapter presents a detailed discussion of the characteristics of the research sample, the data examination, and the findings of this study.

First, the salient characteristics of the research sample are presented. The characteristics include (1) distribution of the magnitude of FDI, (2) regional distribution of FDI activities, (3) composition of the research sample by types of manufacturing industries, and (4) composition of ownership patterns of the research sample.

Second, before testing the research hypotheses, the data are examined to verify that they conform to the underlying assumptions of the statistical methods employed. Where assumptions are violated, appropriate measures are taken to correct the violations.
Finally, the findings concerning each research hypothesis are discussed thoroughly. Chapter 5 presents the overall conclusion of this study based on these empirical findings. It also includes theoretical and managerial implications of the empirical findings presented here along with future research issues.

Characteristics of the Research Sample

The unit of analysis is an individual foreign subsidiary established by Korean manufacturing MNCs during the period of 1988-1990. The research sample is selected from Korean manufacturing firms that invested abroad during the period of 1988-1990. Among Korean manufacturing firms that established foreign production facilities during this period, the research sample is limited to those firms whose financial statements are available. Therefore, this study analyzes 176 foreign subsidiaries established by 133 different Korean manufacturing companies during the period of 1988-1990.

This section explains the characteristics of the research sample. It includes the description of the magnitude of FDI, the distribution of the research sample by region, and the composition of the foreign subsidiary by type of manufacturing industry and ownership composition.
Description of the Magnitude of FDI

Table 8 provides brief descriptive statistics concerning the magnitude of FDI made by firms in the research sample. The average amount of foreign direct investment made by Korean MNCs in the sample is $3.451 million, and the size of investment ranges from $25,000 to $78.75 million. However, as table 8 shows, seventy-one FDI decisions involved less than $1 million. This evidence is consistent with results of studies by Wells (1983) and Jo (1981), who find that the amount of FDI made by Third World MNCs tends to be relatively small. The data also confirm that the dependent variable enjoys considerable variation in the sample.

Composition of Sample by Type of Manufacturing Industry

Table 9 describes the composition of the research sample by type of manufacturing industry. The classification is based on the two-digit Korean Standard Industry Code (KSIC).

As shown in table 9, all nine manufacturing industry sectors are represented in this research sample. However, two industries--textile, apparel, and leather industry (KSIC 32) and fabricated metal products, machinery, and equipment industry (KSIC 38)--account for 64.4 percent of the observations.
<table>
<thead>
<tr>
<th>Magnitude of FDI (’000 dollars)</th>
<th>No. of observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 500</td>
<td>32</td>
</tr>
<tr>
<td>500 to 1,000</td>
<td>39</td>
</tr>
<tr>
<td>1,000 to 2,000</td>
<td>47</td>
</tr>
<tr>
<td>2,000 to 5,000</td>
<td>37</td>
</tr>
<tr>
<td>Over 5,000</td>
<td>21</td>
</tr>
</tbody>
</table>

Mean FDI $ 3,451,557  
Minimum FDI $ 25,000  
Maximum FDI $ 78,750,000
<table>
<thead>
<tr>
<th>KSIC</th>
<th>Industry</th>
<th>No. of</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Food &amp; Beverages</td>
<td>7</td>
<td>4.0</td>
</tr>
<tr>
<td>32</td>
<td>Textile, Wearing Apparels, &amp; Leather</td>
<td>52</td>
<td>29.6</td>
</tr>
<tr>
<td>33</td>
<td>Wood &amp; Furniture</td>
<td>6</td>
<td>3.4</td>
</tr>
<tr>
<td>33</td>
<td>Paper, Printing, &amp; Publishing</td>
<td>6</td>
<td>3.4</td>
</tr>
<tr>
<td>35</td>
<td>Chemicals, Petroleum, Coal, Rubber, &amp; Plastics</td>
<td>24</td>
<td>13.6</td>
</tr>
<tr>
<td>36</td>
<td>Non-metallic Mineral Products</td>
<td>5</td>
<td>2.8</td>
</tr>
<tr>
<td>37</td>
<td>Basic Metal</td>
<td>5</td>
<td>2.8</td>
</tr>
<tr>
<td>38</td>
<td>Fabricated Metal Products, Machinery &amp; Equipment</td>
<td>62</td>
<td>35.2</td>
</tr>
<tr>
<td></td>
<td>(i.e., machinery, electronic &amp; electronic equipment, transport equipment, scientific equipment)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Other Manufacturing</td>
<td>9</td>
<td>5.1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>176</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Composition of the Research Sample by Region and Ownership

Table 10 describes the distribution of foreign direct investment decisions in the research sample by location of investment. As we can see in the table, Korean manufacturing firms in the sample invested largely in developing countries (74.4% of the observations), especially in Asian countries. This evidence suggests that Korean MNCs appear to show considerable preference for countries that either are at the same level or at a lower level of economic development than South Korea.

TABLE 10
COMPOSITION OF THE RESEARCH SAMPLE BY REGION

<table>
<thead>
<tr>
<th>Region</th>
<th>No. of Observations</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>115</td>
<td>65.3</td>
</tr>
<tr>
<td>North America</td>
<td>33</td>
<td>18.8</td>
</tr>
<tr>
<td>South America</td>
<td>13</td>
<td>7.4</td>
</tr>
<tr>
<td>Europe</td>
<td>12</td>
<td>6.8</td>
</tr>
<tr>
<td>Africa</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Oceania</td>
<td>2</td>
<td>1.1</td>
</tr>
</tbody>
</table>
Korean manufacturing MNCs seem to prefer joint ventures to wholly owned subsidiaries as a mode of entering foreign markets (see table 11). Actually, 65.5 percent of the total FDI decisions were associated with joint ventures. This finding is consistent with those of previous studies (Thee 1981; Jo 1981; Wells 1983), which report that a joint venture is the preferred ownership pattern for Third World MNCs in manufacturing foreign direct investment.

### TABLE 11

**COMPOSITION OF THE RESEARCH SAMPLE BY OWNERSHIP PATTERN**

<table>
<thead>
<tr>
<th>Types of Ownership</th>
<th>No. of Observations</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority Ownership</td>
<td>43</td>
<td>24.9</td>
</tr>
<tr>
<td>Equal Equity Ownership</td>
<td>18</td>
<td>10.2</td>
</tr>
<tr>
<td>Majority Ownership</td>
<td>54</td>
<td>30.5</td>
</tr>
<tr>
<td>Wholly Owned Subsidiary</td>
<td>61</td>
<td>34.5</td>
</tr>
</tbody>
</table>
Empirical Testing: Hypotheses 1 to 8

As delineated in chapter 1, one objective of the present study is to investigate firm- and host country-specific determinants that influence the magnitude of manufacturing FDI by Korean MNCs. This objective led to the development of nine specific hypotheses, as described in chapter 3. Multiple regression analysis is employed to test these hypotheses because it allows for a rigorous, multivariate test of the bivariate relationships proposed in the hypotheses.

Considering a Covariate: The Impact of the Percentage of Ownership

It is conceivable to argue that a Korean company’s expected percentage of ownership in the foreign subsidiary could impact the magnitude of FDI. Specifically, one can expect that Korean MNCs that hold a larger equity share in their foreign subsidiaries might invest more than those that hold a smaller share. Therefore, percentage of ownership is included as a covariate in the model. The final regression model to be analyzed is

\[ \text{KMFDI} = B_0 + B_1 \text{R&D} + B_2 \text{ADV} + B_3 \text{CAP} + B_4 \text{CAP} \times \text{SIZE} \\
+ B_4 \text{SIZE} + B_5 \text{CONG} + B_6 \text{GDP} + B_7 \text{GDPGRO} \\
+ B_8 \text{POP} + B_9 \text{PSI} + B_{10} \text{OWNERSHIP} \]
where KMFDI is the amount of manufacturing FDI by a Korean manufacturing MNC invested in a host country to set up a foreign subsidiary. As stated in the previous chapter, independent variables are standardized to eliminate the problem of dealing with different units of measure.

Prior to model estimation, however, an investigation was conducted to determine if the data conformed to the statistical assumptions underlying the least squares regression. The assumptions tested are (1) constant variance of the error terms and (2) normal distribution of error terms. In addition, the problem of multicollinearity among independent variables is to be examined.

Violations of Assumptions and Their Problems

Regression analysis assumes that, for any setting of the independent variables, the errors \( e_i \) are normally distributed with zero mean and constant variance (Hair, Anderson, and Tatham 1987; Mendenhall and Sincich 1986). In practice, these assumptions about residuals are not likely to be satisfied perfectly. The regression model is usually robust in the face of moderate departures from the assumptions. However, estimates could become biased when assumptions are severely violated (Mendenhall and Sincich 1986).
Detecting Unequal Variances and Problems of Violation

One of the assumptions of regression analysis is that error term $e$ has constant variance. Several methods are available to detect unequal variance. Plotting residuals against the predicted values of the criterion variable will indicate unequal variance if anything other than a random distribution of residuals is observed (Hair, Anderson, and Tatham 1987). If the assumption of equal variance is met, the residuals should be randomly distributed in a band shape around the horizontal straight line through 0 (Norusis 1990a).

The least-square estimator is unbiased and consistent, even when the residuals are heteroscedastic (Fox 1991). However, heteroscedasticity reduces the efficiency of the least-square estimator and affects the standard errors of the regression coefficients (Fox 1991; Schroeder, Sjoquist, and Stephan 1986).

Figure 2 presents a plot of the standardized residuals against the predicted values of the criterion variable (the magnitude of FDI). As we can see from figure 2, residuals are not distributed around the horizontal straight line in a band shape. Therefore, the error terms appear to suffer from significant heteroscedasticity—unequal variance.
Figure 2

Standardized Scatterplot of Residuals

Across - *PRED  Down - *ZRESID

Symbols:

Max N

.  3.0
:  6.0
* 14.0

Note: PRED = the predicted values of the criterion variable (the magnitude of FDI)

ZRESID = standardized residuals
Detecting Nonnormality and Problems of Violations

Another assumption of regression analysis is that the error terms are normally distributed. Two simple methods can be used to test the normality assumption. One technique is to construct a histogram of the error terms. The other method is to plot the observed cumulative residuals with the straight line that represents the perfect normal distribution. If residuals are normally distributed, plotting of two residuals will be reasonably comparable without extensive deviations (Hair, Anderson, and Tatham 1987). Here, both methods are used to detect nonnormality.

The assumption of normally distributed residuals is the least restrictive assumption in regression analysis (Mendenhall and Sincich 1986). That is, moderate departures from the normality assumption do not have any significant effect on "error rates associated with the statistical tests and on the confidence coefficients associated with the confidence intervals" (Mendenhall and Sincich 1986, p. 265). Therefore, we can feel reasonably confident the least-square estimators are robust if the distribution of residuals is not badly skewed.

However, we cannot neglect the normality assumption for several reasons. First, the least-square estimator is maximally efficient when the residuals are normally distributed. In addition, for certain types of error distribution (e.g., heavily tailed error distributions), the
least-square estimator becomes very inefficient (Fox 1991). Second, highly skewed residual distributions compromise the interpretation of the fit since the mean is not a good measure of the center of a highly skewed distribution. Therefore, we may need data transformation to produce a normal error distribution. Third, multimodal error distribution may suggest the necessity of respecification of the regression model.

Figure 3 plots the observed residuals against the straight-line that represent normal distribution. The residuals show significant deviation from the normality assumption. Initially, the observed residuals are below the straight line, implying the existence of unexpectedly large number of negative residuals. Later they are above the straight-line, suggesting that the observed values of the residuals exceed the values under the normality assumption.

Figure 4 is the histogram of standardized residuals. As we can see, the distribution does not seem to be normal because the residuals are clustered toward center and skewed toward large positive values.
Figure 3

Normal Probability (P-P) Plot
(Standardized Residual)

Note: "..." = The straight-line plot that represents normal distribution

"********" = The observed values of the residuals
Figure 4
Histogram - Standardized Residual

<table>
<thead>
<tr>
<th>NEp N</th>
<th>N</th>
<th>( 1 Cases, = Normal Curve)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>.12</td>
<td>Out ***</td>
</tr>
<tr>
<td>0</td>
<td>.24</td>
<td>3.00</td>
</tr>
<tr>
<td>0</td>
<td>.62</td>
<td>2.67</td>
</tr>
<tr>
<td>1</td>
<td>1.42</td>
<td>2.33 :</td>
</tr>
<tr>
<td>1</td>
<td>2.90</td>
<td>2.00 * .</td>
</tr>
<tr>
<td>0</td>
<td>5.32</td>
<td>1.67 .</td>
</tr>
<tr>
<td>1</td>
<td>8.72</td>
<td>1.33 * .</td>
</tr>
<tr>
<td>4</td>
<td>12.8</td>
<td>1.00 **** .</td>
</tr>
<tr>
<td>6</td>
<td>16.9</td>
<td>.67 ***** .</td>
</tr>
<tr>
<td>* 19.9</td>
<td>.33</td>
<td>........................</td>
</tr>
<tr>
<td>* 21.0</td>
<td>.00</td>
<td>........................</td>
</tr>
<tr>
<td>* 19.9</td>
<td>.33</td>
<td>........................</td>
</tr>
<tr>
<td>* 16.9</td>
<td>-.67</td>
<td>........................</td>
</tr>
<tr>
<td>8</td>
<td>12.8</td>
<td>-1.00 **** .</td>
</tr>
<tr>
<td>1</td>
<td>8.72</td>
<td>-1.33 * .</td>
</tr>
<tr>
<td>1</td>
<td>5.32</td>
<td>-1.67 * .</td>
</tr>
<tr>
<td>0</td>
<td>2.90</td>
<td>-2.00 .</td>
</tr>
<tr>
<td>0</td>
<td>1.42</td>
<td>-2.33 .</td>
</tr>
<tr>
<td>1</td>
<td>.62</td>
<td>-2.67 :</td>
</tr>
<tr>
<td>0</td>
<td>.24</td>
<td>-3.00 .</td>
</tr>
<tr>
<td>0</td>
<td>.12</td>
<td>Out</td>
</tr>
</tbody>
</table>

Note: "......" = normal curve
Remedial Measures for Violated Assumptions

Because assumptions of constant variance of the error term and normality of the error term distribution appear to have been violated, we can pursue two strategies. One is the formulation of an alternative model (e.g., ridge regression), and the other is the transformation of the variables in order to make the current model more adequate (Norusis 1990a). For instance, taking square roots, arcsine, or logs can stabilize the variance, achieve normality, or linearize a relationship. Here, we will use the transformation strategy to correct violated assumptions.

Data Transformation

We can transform either the dependent or independent variables to correct violated assumptions. A successful transformation should produce a model with constant error variance, approximately normal error distributions, and an easily interpreted and scientifically meaningful structure (Atkinson 1985; Cook and Weisberg 1982). If we transform the dependent variable, it is also hoped that the transformed dependent variable will be normally distributed to an adequate degree of approximation (Atkinson 1985).

The selection of transformation depends on several factors. If the form of the relationship between the dependent variable and independent variables is known, it should dictate the choice. Otherwise, we should select the
transformation by examining the plotted data (Norusis 1990a). The relationship is not known with certainty given the paucity of empirical research in this area. However, Kim and Lyn (1987) used the logarithmic transformation of the dependent variable (industry-level FDI data) in a study of FDI activities of foreign MNCs in the U.S. The regression model with the transformed dependent variable yielded better results than did the original regression model.

Therefore, the logarithmic transformation of the dependent variable is done based on Kim and Lyn's (1987) research. Figures 5, 6, and 7 suggest that logarithmic transformation of the dependent variable does significantly overcome the problems of nonconstant error variance and nonnormal error distribution.

Figure 5 indicates that the assumption of constant variance of error terms is achieved through a log transformation. As we can see, the new residuals are more randomly distributed around the horizontal line through 0.

Figure 6 shows that the transformation satisfies the normality assumption too. Although the plotted residuals do not fall perfectly on the diagonal line, the logarithmic transformation has improved the situation considerably. To take an additional measure, the Lilliefors test is used to compute a statistical test of the hypothesis that the residuals have normal distribution. This test is based on
Figure 5

Standardized Scatterplot of Residuals with Log (FDI) as the Dependent Variable

Across - *PRED    Down - *ZRESID

Symbols:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Max N</th>
</tr>
</thead>
<tbody>
<tr>
<td>.</td>
<td>1.0</td>
</tr>
<tr>
<td>:</td>
<td>2.0</td>
</tr>
<tr>
<td>*</td>
<td>7.0</td>
</tr>
</tbody>
</table>

Note: PRED = the predicted values of the criterion variable (the magnitude of FDI)

ZRESID = standardized residuals
Figure 6

Normal Probability (P-P) Plot of Residuals with Log (FDI) as the Dependent Variable
(Standardized Residual)

Note: "........" = The straight-line plot that represents normal distribution

"********" = The observed values of the residuals
Figure 7

Histogram Frequency and Normal Curve of the
Transformed Dependent Variable
(Log FDI)

<table>
<thead>
<tr>
<th>Count</th>
<th>Midpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tr>
<tr>
<td>0</td>
<td>3.7</td>
</tr>
<tr>
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<td>4.2</td>
</tr>
<tr>
<td>5</td>
<td>4.7</td>
</tr>
<tr>
<td>11</td>
<td>5.2</td>
</tr>
<tr>
<td>8</td>
<td>5.7</td>
</tr>
<tr>
<td>22</td>
<td>6.2</td>
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<td>34</td>
<td>6.7</td>
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<td>3</td>
<td>10.7</td>
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<tr>
<td>1</td>
<td>11.2</td>
</tr>
</tbody>
</table>

Note: ".........." = normal curve
"a modification of the Kolmogorov-Smirnov test for the situation when means and variances are not known but must be estimated from the data" (Norusis 1990b, p. B-104). The Lilliefors test statistic is .0484 and the p-value is .2000, suggesting that the residuals have normal distribution.

Finally, figure 7 reveals the distribution of the transformed dependent variable. The transformed dependent variable appears to have an approximate normal distribution.

All this evidence confirms the value of logarithmic transformation. The evidence also indicates that the relationship between the magnitude of FDI and the explanatory variables is nonlinear as Kim and Lyn (1987) suggest. The regression model using the logarithmic transformation will provide reliable regression coefficients.

Checking Multicollinearity

Multicollinearity refers to the situation in which there is a high correlation between independent variables. It is common, in practice, to find some correlation among the independent variables, but high correlation may distort the results of a regression analysis.

In the presence of multicollinearity, the least square estimator remains unbiased and is still the best linearly unbiased estimator (BLUE), and the R² is not affected (Kennedy 1992). However, several problems occur if serious
First, significant multicollinearity increases the likelihood of rounding errors in the calculations of the regression coefficient (the B estimates), standard errors, and so on (Mendenhall and Sincich 1986).

Second, multicollinearity could have an effect on the signs of the parameter estimates. More specifically, a value of the regression coefficient may have the opposite sign from what is expected. Therefore, we have to be cautious in interpreting beta coefficients when the independent variables are highly correlated.

Third, the regression results can be confusing and misleading because of multicollinearity. For instance, nonsignificant t-tests might be found for the individual B parameters although the overall F test for the model is significant, because standard errors get inflated in the presence of multicollinearity. This is because the contribution of one variable overlaps that of the other variable or variables.

Detecting Multicollinearity

A number of methods can be used to diagnose multicollinearity in regression analysis, although there are no perfect methods (Kennedy 1992). One simple and common method is to measure the Pearson product moment coefficient correlation between each pair of independent variables.
Large correlations may indicate the existence of multicollinearity. However, multicollinearity may be present even when no pairwise correlations are very high. Several variables may be highly correlated as a group, but may not exhibit large pairwise correlations (Belsley, Kuh, and Welch 1980; Kennedy 1992; Mendenhall and Sincich 1986). Therefore, the correlation matrix is not a significant tool for detecting multicollinearity problem.

More formally, variance inflation factors (VIFs) or tolerance, for the individual $B$ parameters can be measured to detect multicollinearity (Fox 1991; Kennedy 1992; Mendenhall and Sincich 1986; Norusis 1990a). Variance inflation factors will be large (tolerance will be small) when the independent variable $x_i$ are highly correlated with other independent variables in the regression model. In general, if the variance inflation factor is larger than 10, or equivalently, if tolerance $< .10$, multicollinearity problems may exist (Fox 1991; Kennedy 1992; Mendenhall and Sincich 1986).

Condition indexes\(^7\) are advocated by Belsley, Kuh, and Welch (1980) and Kennedy (1992) as a satisfactory way of detecting multicollinearity. This tool compares the eigenvalues of the scaled, uncentered cross-product matrix $X^TX$ (Norusis 1990a). If the maximum eigenvalue is very

\(^7\)See chapter 3 of Belsley, Kuh, and Welch (1980) for a detailed discussion of condition indexes.
large relative to the other eigenvalues, high condition indexes exist. In this case, the given data matrix is said to be "ill-conditioned" (Belsley, Kuh, and Welch 1980; Norusis 1990a). The ill-conditioned data matrix suggests the existence of multicollinearity problem. As a rule of thumb, for standardized data, a condition index that is greater than 30 indicates harmful collinearity (Belsley, Kuh, and Welch 1980; Kennedy 1992).

Tables 12, 13, and 14 represent correlation matrix, tolerance and variance inflation factors, eigenvalues and condition indexes for the independent variables in the model, respectively. As we can see from table 12, "high" correlations exist only between per capita GDP and political risk, per capita GDP and market growth, and market growth and political risk. However, as Table 13 indicates, no variance inflation factor is greater than 10. In addition, as table 14 shows, no conditional index is greater than 30. Hence, there seem to be no severe multicollinearity problems in this regression model.

Nonetheless, to be absolutely certain of this fact, the full model was re-estimated with sixteen different randomly selected subsamples to assess the stability of the parameter estimates (Erramilli and Rao 1993). The parameter estimates of the independent variables are fairly stable over sixteen re-estimations. Therefore, the possibility of harmful collinearity problems can be disregarded.
<table>
<thead>
<tr>
<th></th>
<th>FDI</th>
<th>RND</th>
<th>ADV</th>
<th>SIZE</th>
<th>CG</th>
<th>CAP</th>
<th>GDP</th>
<th>MAGR</th>
<th>POP</th>
<th>PSI</th>
<th>OWN</th>
<th>CAPSIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
<td>1.000</td>
<td>-0.04</td>
<td>-0.79</td>
<td>0.163</td>
<td>0.319*</td>
<td>0.374*</td>
<td>0.176</td>
<td>0.085</td>
<td>-0.061</td>
<td>0.130</td>
<td>0.427*</td>
<td>0.048</td>
</tr>
<tr>
<td>RND</td>
<td>1.000</td>
<td>0.343*</td>
<td>0.007</td>
<td>0.079</td>
<td>0.078</td>
<td>0.132</td>
<td>0.139</td>
<td>0.129</td>
<td>0.135</td>
<td>-0.035</td>
<td>0.016</td>
<td></td>
</tr>
<tr>
<td>ADV</td>
<td>1.000</td>
<td>0.087</td>
<td>0.190</td>
<td>-0.072</td>
<td>0.034</td>
<td>0.006</td>
<td>0.029</td>
<td>0.034</td>
<td>-0.173</td>
<td>0.052</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
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<td>0.584*</td>
<td>0.175</td>
<td>0.107</td>
<td>0.018</td>
<td>-0.141</td>
<td>0.057</td>
<td>-0.258*</td>
<td>0.196</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CG</td>
<td>1.000</td>
<td>0.255*</td>
<td>0.190</td>
<td>0.108</td>
<td>-0.148</td>
<td>0.156</td>
<td>-0.215*</td>
<td>0.608*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAP</td>
<td>1.000</td>
<td>0.184</td>
<td>0.175</td>
<td>0.019</td>
<td>0.186</td>
<td>-0.054</td>
<td>0.342*</td>
<td></td>
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</tr>
<tr>
<td>GDP</td>
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<td>0.818*</td>
<td>0.155</td>
<td>0.908*</td>
<td>0.105</td>
<td>181</td>
<td></td>
<td></td>
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<tr>
<td>MAGR</td>
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<td>0.081</td>
<td>102</td>
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</tr>
<tr>
<td>POPU</td>
<td>1.000</td>
<td>-0.058</td>
<td>0.031</td>
<td>0.136</td>
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<td></td>
<td></td>
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<tr>
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<td></td>
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</tr>
<tr>
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<td>1.000</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: * = significant at p-value < 0.05
### Table 13

**Measures of Multicollinearity: Tolerance and VIF**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D-intensity</td>
<td>.841364</td>
<td>1.189</td>
</tr>
<tr>
<td>Advertising-intensity</td>
<td>.808931</td>
<td>1.236</td>
</tr>
<tr>
<td>Firm size</td>
<td>.608504</td>
<td>1.643</td>
</tr>
<tr>
<td>Capital intensity</td>
<td>.704576</td>
<td>1.419</td>
</tr>
<tr>
<td>Capital*Firm size</td>
<td>.746117</td>
<td>1.340</td>
</tr>
<tr>
<td>Membership in a conglomerate</td>
<td>.586764</td>
<td>1.704</td>
</tr>
<tr>
<td>Per capita GDP</td>
<td>.135457</td>
<td>7.382</td>
</tr>
<tr>
<td>Market growth</td>
<td>.260311</td>
<td>3.842</td>
</tr>
<tr>
<td>Population</td>
<td>.797846</td>
<td>1.253</td>
</tr>
<tr>
<td>Political stability</td>
<td>.157034</td>
<td>6.368</td>
</tr>
<tr>
<td>Ownership percentage</td>
<td>.878585</td>
<td>1.138</td>
</tr>
</tbody>
</table>

Note: Tolerance = $1-R^2_i$

$VIF_i = 1/(1-R^2_i)$

where $R^2_i$ is the multiple coefficient of determination for when the $i^{th}$ independent variable is regressed on the other independent variables.
TABLE 14
MEASURES OF MULTICOLLINEARITY:
EIGENVALUE AND CONDITION INDEX

<table>
<thead>
<tr>
<th>Number</th>
<th>Eigenvalue</th>
<th>Condition Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.89278</td>
<td>1.000</td>
</tr>
<tr>
<td>2</td>
<td>2.03681</td>
<td>1.192</td>
</tr>
<tr>
<td>3</td>
<td>1.48878</td>
<td>1.394</td>
</tr>
<tr>
<td>4</td>
<td>1.31479</td>
<td>1.483</td>
</tr>
<tr>
<td>5</td>
<td>1.14552</td>
<td>1.589</td>
</tr>
<tr>
<td>6</td>
<td>0.89726</td>
<td>1.796</td>
</tr>
<tr>
<td>7</td>
<td>0.73289</td>
<td>1.987</td>
</tr>
<tr>
<td>8</td>
<td>0.61607</td>
<td>2.167</td>
</tr>
<tr>
<td>9</td>
<td>0.40712</td>
<td>2.666</td>
</tr>
<tr>
<td>10</td>
<td>0.20382</td>
<td>3.767</td>
</tr>
<tr>
<td>11</td>
<td>0.18015</td>
<td>4.007</td>
</tr>
<tr>
<td>12</td>
<td>0.08401</td>
<td>5.868</td>
</tr>
</tbody>
</table>

Note: Condition Index<sub>i</sub> = \( \sqrt{\text{Eigenvalue}_{\text{max}}/\text{Eigenvalue}_{i}} \).
Overall Test Results of the Model

Table 15 presents the estimated results of the model. The overall regression model is statistically significant at \( p < 0.00001 \) level, and 48.777\% of the variation of \( Y \) is explained by the independent variables \( (R^2 = 0.48777) \).

Adding a covariate (percentage of ownership) to the main-effect-only model increased \( R^2 \) by 24.157 percent. The \( F \) change was 67.58356, and it is significant at \( p < 0.00001 \). Also, adding the interaction term (Capital intensity x Firm size) to the foregoing model increased \( R^2 \) by 1.678 percent, and it is also significant at \( p < 0.0298 \).

The inclusion of a covariate and the interaction effect do not change the relationship between the dependent variable and independent variables. The independent variables that had significant impact on the magnitude of FDI still have the same positive influence although the level of significance changed slightly. Thus, the estimated results of the full model will be interpreted. The effects being reported are in presence of other effects. Partial \( R^2 \) shows the contribution of each independent variable.

Test Results: Impact of Firm-specific Factors on the magnitude of FDI

Hypotheses 1 to 4 test the impact of firm-specific factors on the magnitude of FDI. Findings of each hypothesis are reported separately.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Label</th>
<th>b</th>
<th>Standard Error</th>
<th>Partial R²</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>b0</td>
<td>6.791041</td>
<td>.114598</td>
<td></td>
<td>59.259</td>
</tr>
<tr>
<td>R&amp;D-intensity</td>
<td>b1</td>
<td>-.089816</td>
<td>.084088</td>
<td>-.087757</td>
<td>-1.068</td>
</tr>
<tr>
<td>Advertising-intensity</td>
<td>b2</td>
<td>.003676</td>
<td>.085758</td>
<td>.003535</td>
<td>.043</td>
</tr>
<tr>
<td>Capital intensity</td>
<td>b3a</td>
<td>.510436</td>
<td>.091889</td>
<td>.416526</td>
<td>5.555⁴</td>
</tr>
<tr>
<td>Capital intensity*Size</td>
<td>b3b</td>
<td>.407398</td>
<td>.185665</td>
<td>.178087</td>
<td>2.194⁴</td>
</tr>
<tr>
<td>Firm Size</td>
<td>b4</td>
<td>.012630</td>
<td>.098877</td>
<td>.010534</td>
<td>.128</td>
</tr>
<tr>
<td>Conglomerate membership</td>
<td>b5</td>
<td>.816452</td>
<td>.204678</td>
<td>.312524</td>
<td>3.989⁵</td>
</tr>
<tr>
<td>Per capita GDP</td>
<td>b6</td>
<td>.350681</td>
<td>.209569</td>
<td>.136719</td>
<td>1.673⁵</td>
</tr>
<tr>
<td>Market growth</td>
<td>b7</td>
<td>-.165624</td>
<td>.151176</td>
<td>-.089995</td>
<td>-1.096</td>
</tr>
<tr>
<td>Population</td>
<td>b8</td>
<td>.031644</td>
<td>.086351</td>
<td>.030211</td>
<td>.366</td>
</tr>
<tr>
<td>Political stability</td>
<td>b9</td>
<td>-.263382</td>
<td>.194640</td>
<td>-.110920</td>
<td>-1.353</td>
</tr>
<tr>
<td>Ownership percentage</td>
<td>b10</td>
<td>.682371</td>
<td>.082288</td>
<td>.564539</td>
<td>8.292⁶</td>
</tr>
</tbody>
</table>

R Square .48777    Adjusted R Square .44944    F=12.72540    Significant F=.0000

Note: a=p<0.10    b=p<0.05    c=p<.0005
Hypothesis 1: R&D-intensity

It was hypothesized that the magnitude of FDI by Korean manufacturing MNCs is independent of their R&D-intensity. In table 14, $b_1$ is statistically insignificant, suggesting that the R&D-intensity has no relationship with the magnitude of FDI ($b_1=-1.068, p=.2872$). As hypothesized, increasing R&D-intensity of Korean MNCs does not seem to affect the magnitude of their FDI. This evidence appears to confirm that Third World MNCs do not have monopolistic advantages based on product differentiation created by intensive investment in R&D. Therefore, hypothesis 1 is supported.

Hypothesis 2: Advertising-intensity

It was hypothesized that the magnitude of FDI by Korean manufacturing MNCs is independent of their advertising-intensity. In table 14, $b_2$ is statistically insignificant, suggesting that advertising is not a significant determinant of FDI ($b_2=0.03676, p=.9659$). As predicted, increasing advertising-intensity of Korean MNCs does not seem to influence the magnitude of their FDI. This means that Third World MNCs do not have an advantage based on brand identities that are created by intensive investment in advertising. Therefore, hypothesis 2 is supported.
Hypotheses 3a & 3b: Capital intensity

It was hypothesized that the magnitude of FDI by Korean MNCs will increase with increasing capital intensity. In addition, it is also predicted that the foregoing relationship becomes stronger with increasing firm size. As shown in Table 14, coefficient $b_{3a} (.510436)$ is statistically significant at $p=.0000$, suggesting that increasing capital intensity of Korean MNCs seems to have a positive impact on their magnitude of FDI. Coefficient $b_{3b} (.407398)$ is also statistically significant at $p=.0298$, implying that the positive relationship between capital intensity and magnitude of FDI becomes higher with increasing firm size. Therefore, Hypotheses 3a and 3b are supported.

Hypothesis 4: Membership in a Conglomerate Group

It was hypothesized that the magnitude of FDI by Korean manufacturing MNCs is greater if the MNCs are members of a conglomerate group. In Table 14, $b_5 (.816452)$ is statistically significant at $p=.0000$, implying that members in a conglomerate group appear to invest significantly greater amounts of FDI than do non-members. A firm's membership in a conglomerate seems to provide the firm greater ability and additional advantages such as access to a variety of technologies, management skills, and so on. Therefore, hypothesis 4 is supported.
Test Results: Impact of Location-specific Factors on the magnitude of FDI

Hypotheses 5 to 8 test the impact of host country location-specific factors on the magnitude of FDI by Korean MNCs. In general, the hypotheses on location-specific factors predict that Third World MNCs, like their counterparts from developed countries, will invest more in host countries that have attractive market conditions.

Hypothesis 5: Market Size

It was predicted that the market size of the host country, in terms of per capita GDP, has a positive impact on the magnitude of FDI. The coefficient of $b_6$ (.350681) is positively signed, but barely significant at the .10 level ($p=.0964$). Generally, it seems that increasing market size tends to induce Korean MNCs to increase their FDI commitments to the host country. Therefore, we can conclude that the magnitude of FDI by Korean MNCs is larger in countries that have higher per capita GDP. Hypothesis 5 is supported.

Hypothesis 6: Market Growth

It was hypothesized that the magnitude of FDI by Korean MNCs will be higher in host countries that have higher market growth than those that have lower market growth. However, coefficient $b_7$ (-.165624) is not statistically significant ($p=.2751$), suggesting that Korean
MNCs are not attracted by the market growth potential of host countries. Therefore, hypothesis 6 is not supported.

**Hypothesis 7: Population Size**

Hypothesis 7 stated that Korean MNCs will invest more in host countries that have a larger populations than those that have a smaller populations. However, the result indicates that population size does not have any significant impact on the magnitude of FDI ($b_8=.031644$, $p=.7146$). Therefore, hypothesis 7 is not supported.

**Hypothesis 8: Political Stability**

It was predicted that the political stability of a host country has a positive impact on the magnitude of FDI. The result does not support the hypothesized relationship between the magnitude of FDI and political risk ($b_9=-.263382$, $p=.1781$). Apparently, the political stability of host countries does not seem to influence Korean MNCs' commitments to the host country to a significant degree. Therefore, hypothesis 8 is not supported.

**Empirical Testing: Hypothesis 9**

Hypothesis 9 investigates whether the characteristics of Korean firms investing in developing countries are different from those investing in developed countries. Specifically, hypothesis 9 examines whether the average
labor-intensity of Korean MNCs investing in developing countries is higher than that of those investing in developed countries. The mean difference between the labor-intensity of Korean MNCs investing in developed countries and developing countries is tested using the t-test.

As stated in chapter 3, average assets per employee is used as a proxy measure for labor-intensity in order to be consistent with previous research on Third World MNCs. Specifically, it can argued that the larger average assets per employee of a firm, the smaller the labor-intensity of the firm.

Table 15 shows the findings of the pooled-variance test. The F test suggests that the population variances are equal. Therefore, the pooled-variance test is the appropriate test. As table 15 indicates, the mean difference in average assets per employee between the two groups is statistically significant. Therefore, as we hypothesized, Korean firms investing in developing countries (LDCs) are more labor-intensive than those investing in developed countries (DCs). Hypothesis 9 is, therefore, supported.

In addition, as shown in table 16, in industries that can be generally classified as labor-intensive industries (e.g., textile, wearing apparel, and leather industries, as well as other manufacturing industries), Korean firms investing in developing countries (LDCs) substantially
outnumber those investing in developed countries (DCs). This appears to be additional supporting evidence of Hypothesis 9. However, the use of 2-digit KSIC groupings produces industry classifications that are broad. Therefore, the labor intensity of firms in the same industries may vary significantly. Results should be interpreted with caution.

TABLE 16
DIFFERENCE IN LABOR-INTENSITY OF KOREAN MNCS

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean Labor-intensity (average assets per employee)</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korean firms investing in LDCs</td>
<td>44738</td>
<td>4204.899</td>
</tr>
<tr>
<td>Korean firms investing in DCs</td>
<td>68207</td>
<td>8180.888</td>
</tr>
</tbody>
</table>

T-value -2.76 Degrees of Freedom 174 p-value .006
### TABLE 17

KOREAN MNCs INVESTING IN LDCS AND DCs BY TYPE OF MANUFACTURING INDUSTRY

<table>
<thead>
<tr>
<th>KSIC</th>
<th>Industry</th>
<th>No. of Subsidiaries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LDCs</td>
</tr>
<tr>
<td>31</td>
<td>Food &amp; Beverage</td>
<td>4</td>
</tr>
<tr>
<td>32</td>
<td>Textile, Wearing Apparels, &amp; Leather</td>
<td>45</td>
</tr>
<tr>
<td>33</td>
<td>Wood &amp; Furniture</td>
<td>0</td>
</tr>
<tr>
<td>34</td>
<td>Paper, Printing &amp; Publishing</td>
<td>6</td>
</tr>
<tr>
<td>35</td>
<td>Chemicals, Petroleum, Coal, Rubber, &amp; Plastics</td>
<td>17</td>
</tr>
<tr>
<td>36</td>
<td>Non-metallic Mineral Products</td>
<td>4</td>
</tr>
<tr>
<td>37</td>
<td>Basic Metal</td>
<td>2</td>
</tr>
<tr>
<td>38</td>
<td>Fabricated Metal Products, Machinery &amp; Equipment (i.e., machinery, electronic &amp; electronic equipment, transport equipment, scientific equipment)</td>
<td>42</td>
</tr>
<tr>
<td>39</td>
<td>Other Manufacturing</td>
<td>9</td>
</tr>
</tbody>
</table>

**Total** 129 47
Summary of Chapter 4

This chapter presented results of the empirical investigation. As hypothesized, firm-specific factors that influence FDI decisions of Third World MNCs are different from those that impact FDI decisions of the traditional MNCs. R&D-intensity and advertising-intensity, the two most significant variables that influence FDI behavior of the traditional MNCs, do not have any significant impact on the magnitude of FDI by Korean MNCs.

Membership in a conglomerate has a positive impact on the magnitude of FDI. Increasing capital intensity of Korean MNCs appears to have a positive impact on the magnitude of their investment. The positive relationship between capital intensity and the magnitude of FDI becomes higher with increasing firm size.

Test results on host country-specific factors do not support all the research hypotheses. Market size, measured by per capita GDP, shows a significant positive impact. However, the other variables, including population size, market growth, and political risk, fail to support the research hypotheses.

Chapter 5 includes a discussion of the theoretical and managerial implications of the test results along with some precautions that should be taken in interpreting these test results. In addition, chapter 5 presents important future research issues on Third World MNCs.
CHAPTER V

CONCLUSION

Introduction

Chapter 5 presents theoretical and managerial implications of the empirical findings along with the discussion of these findings. In addition, this chapter gives the precautions that should be taken in interpreting the results of this research. Finally, this chapter features the important future research issues to which we must direct more attention in order to have better understanding of Third World MNCs.

Discussion of Findings

The present study differs from previous studies on Third World MNCs because it empirically tests specific hypotheses with reliable firm-level data and relatively large sample size. Previous studies on Third World MNCs were descriptive in nature and investigated only industry-level data, although FDI theory development has been at the firm level. Therefore, the findings of the present study appear to make significant contributions to international marketing discipline for several reasons.
First, the findings of this study provide some general insights into firm- and location-specific factors that affect the magnitude of FDI by individual firms. Previous studies on Third World MNCs did not investigate these relationships. Even numerous studies on the traditional MNCs used industry-level and country-level FDI data to examine the impact of firm- and location-specific factors on the magnitude of FDI.

Second, from the present study, we can determine whether firm- and location-specific factors that influence the FDI decisions of Third World MNCs differ from those that influence the FDI decisions the traditional MNCs. Previous research on Third World did not sufficiently address this research issue.

Finally, the results of this study are more reliable than those of previous studies because the present study uses relatively more reliable and complete firm-level data. As Wells (1983) observes, one significant obstacle in studying Third World MNCs is the difficulty of obtaining reliable data.

Findings on the Impact of Firm-specific Factors on FDI

The results of hypotheses related to firm-specific factors suggest that the firm-specific determinants of FDI by Third World MNCs may be different from those of FDI by the traditional MNCs. Specifically, the empirical findings
suggest that R&D-intensity and advertising-intensity have no significant influence on the magnitude of FDI by Korean MNCs. In contrast, those two factors do have significant impact on the FDI behavior of the traditional MNCs (Caves 1971, 1974; Graham 1978; Gruber, Metha, and Vernon 1967; Horst 1972; Kim and Lyn 1987; Kimura 1989; Lall 1980). Hence, we may contend that Third World MNCs do not seem to possess monopolistic advantages based on product differentiation created by investment in R&D and advertising.

The above findings also suggest that low pricing strategy is the appropriate marketing strategy for Korean MNCs, as previous studies on Third World MNCs indicate (Lall 1983; Lecraw 1981; Wells 1983). Without having the ability to differentiate products based on advanced technology and brand images, the low pricing strategy is the only viable marketing tool for Third World MNCs. All the firm-specific variables that allow low pricing strategy cannot be identified in the present study because of data limitations. However, Korean MNCs' low investment in R&D and advertising appear to be sources of low pricing strategy.

The magnitude of FDI increases with increasing capital intensity of Korean MNCs, a tendency that becomes stronger with increasing firm size. The foregoing relationships are not investigated by previous research on Third World MNCs. However, Kim and Lyn (1987) report the importance of capital
intensity on FDI decisions.

Membership in a conglomerate group has a positive impact on the size of FDI. Specifically, members in a conglomerate group appear to make more investment than non-members. However, this finding may only be applicable to MNCs from Third World Nations where economic power is concentrated in a handful of conglomerate groups, as in Korea.

Findings on the Impact of Location-specific Factors on FDI

Among the location-specific variables of host countries, only market size, measured by per capita GDP, has a significant positive impact on the magnitude of FDI by Korean MNCs. This finding is consistent with previous studies on the traditional MNCs (Agodo 1978; Aharoni 1966; Ajami and BarNiv 1984; Bass, McGregor, and Walters 1977; Bennett and Green 1972; Brewer 1981; Chase, Kuhle, and Walther 1988; Davidson 1980; Fatehi-Sedeh and Safizadeh 1989; Goodnow and Hansz 1972; Green and Cunningham 1975; Green and Smith 1972; Kobrin 1976, 1978, 1979; Levis 1979; Maclayton, Smith, and Hair 1980; Nigh 1985; Nigh, Cho, and Krishnan 1986; O’Sullivan 1985; Root 1968; Root and Ahmed 1978, 1979; Scaperlanda and Mauer 1969; Schneider and Frey 1985; Schollhammer and Nigh 1984; Solocha, Soskin, and Kasoff 1990 Terpstra and Yu 1988).
These studies consistently report that market size has a significant positive impact on the FDI decisions of the traditional MNCs. However, results concerning the impact of other location variables, including market growth, population size, and political risk have been inconclusive. Therefore, it may be argued that market size is the only important host country-specific economic factor that influences the FDI decisions of both Third World MNCs and the traditional MNCs.

The result of the impact of the political condition of host countries on the magnitude of FDI is somewhat unexpected. One speculation is that the way Third World MNCs evaluate the political stability of a host country may be different from that of the traditional MNCs because Third World Nations themselves tend to be politically unstable. Thus, it is possible that politically high risk countries from the traditional MNCs' perspective may not be high risk countries from Third World MNCs' viewpoint. This contention implies that we may have to develop a political risk index from the Third World MNCs' perspective. The existing political risk indexes appear to reflect the traditional MNCs' viewpoint since these indexes are developed in western countries. The political risk indexes that represent Third World MNCs' perspective may provide a more clear picture regarding the impact of the political condition of host countries on the FDI decisions of Third World MNCs.
Implications of the Empirical Findings

Theoretical Implications

The present study investigated three issues concerning the FDI behavior of Korean manufacturing MNCs. The first issue was the impact of firm-specific factors on the magnitude of manufacturing FDI. The second issue was the impact of location-specific factors on the magnitude of manufacturing FDI. The third issue was the firm characteristics that differentiate Korean manufacturing firms investing in developing countries from those investing in developed countries. This section discusses the theoretical implications of the findings of each research area along with the overall theoretical implications.

Implications of Findings on Firm-specific Factors

One of the research objectives was to investigate the impact of firm-specific characteristics on the magnitude of manufacturing FDI. As the findings suggest, the firm-specific factors that influence the magnitude of FDI of Third World MNCs appear to be different from those that influence the size of FDI of the traditional MNCs. R&D-intensity and advertising intensity are not the significant determinants of FDI, unlike their counterparts from developed countries.
In addition, the study examines three new factors--membership in a conglomerate, capital intensity, and the interaction effect between firm size and capital intensity--that influence FDI decisions of Third World MNCs. Test results indicate that these factors have a positive impact on the magnitude of FDI.

These findings suggest that the existing FDI theories that explain the impact of ownership-specific advantage on the FDI behavior of the traditional MNCs are not applicable to Third World MNCs in the same form. Unlike their counterparts from developed countries, Third World MNCs appear not to possess monopolistic advantages based on advanced technology and brand identities. Dunning (1981a), Lutz and Green (1983), and Vernon (1966) argue that ownership advantages of MNCs are generated in response to the home country market characteristics. Thus, the market conditions of developing countries are not likely to produce Third World MNCs that possess competitive advantages based on advanced technology and sophisticated marketing skills.

Although direct empirical investigation is not feasible because of data limitations, the findings of the present study indicate that Third World MNCs seem to have advantages based on pricing, as previous studies on Third World MNCs report (Kumar and Kim 1984; Lall 1983; Lecraw 1981; Wells 1983). Their low investment in R&D and advertising enable them to compete successfully at low-end
markets where price competition is a viable marketing strategy. Actually, firms in the research sample, on average, spent 0.149 % of sales in R&D and 1.080 % of sales in advertising.⁸

Therefore, it is imperative for researchers in international business to develop an FDI theory for Third World MNCs that can explain firm-specific factors that influence their FDI decisions. This theoretical framework will make a significant contribution to the progress of scientific knowledge in this area.

Calling for the development of an FDI theory for Third World MNCs does not mean that the existing FDI theories contending MNCs should possess monopolistic advantages before they engage in FDI are being questioned in the present study. What is being suggested by the research findings is that the source of monopolistic advantages of Third World MNCs is different from those of the traditional MNCs.

Implications of Findings on Location-Specific Factors

The results of this study suggest that only market size, measured by per capita GDP, has a significant and positive impact on the magnitude of FDI by Korean MNCs among

⁸Based on the U.S. criteria, Wells (1983) classifies high, medium, and low R&D- and advertising-intensity. Low R&D- and advertising-intensity means that the ratio of R&D and advertising expenditure to sales is less than one percent.
all location-specific variables. This finding is consistent with previous research on the traditional MNCs. Previous studies on the traditional MNCs consistently report that market size is a significant determinant of FDI (Davidson 1980; Green and Cunningham 1975; Kobrin 1976; Nigh 1985; O'Sullivan 1985; Root and Ahmed 1978; Scaperlanda and Mauer 1969; Schneider and Frey 1985; Schollhammer and Nigh 1984).

Reported findings on the impact of market growth and population size on FDI are inconsistent. Agodo (1978) and Kobrin (1976) find that population size is a major determinant of FDI; but, Green and Cunningham (1975) report that population size is not an important determinant of FDI. Schneider and Frey (1985) and Schollhammer and Nigh (1984) find that the market growth rate of the host country is an important factor in determining the allocation of foreign direct investment. However, Nigh (1985) and Scaperlanda and Mauer (1969) and report that market growth rate is not a significant determinant of FDI. Therefore, it may be concluded that market size is the most important host country-specific economic factor that influences the magnitude of FDI for both Third World MNCs and the traditional MNCs.

The hypothesized relationship between the magnitude of FDI and political risk is not supported. In contrast to the hypothesized prediction, political risk has no significant impact on the magnitude of FDI.
The empirical evidence on location-specific factors indicates that host country-specific factors that influence FDI decisions of Third World MNCs are similar to those that impact the FDI decisions of the traditional MNCs. Hence, it may be argued that the current location advantage theory of FDI could be applicable to Third World MNCs.

However, the foregoing contention cannot be supported until more corroborating evidence is obtained. Since previous research on Third World MNCs has not investigated the impact of location-specific factors on FDI decisions, the results of the research should be treated as exploratory in nature. Furthermore, there may be other location-specific variables not investigated in this research that may influence the FDI activities of Third World MNCs. This is an important research issue for building an FDI theory for Third World MNCs. Future research must investigate not only the location-related variables used in this study, but also other variables that might affect the FDI decisions of Third World MNCs. For instance, the international marketing manager's familiarity with the host country may have a positive impact on his/her FDI decisions.

Implications of Findings on Firm Differences

It was hypothesized that the firm characteristics of Korean MNCs investing in developing countries are different from those investing in developed countries. The underlying
argument is that the labor-intensive, low technology of Third World MNCs may not be advantageous in developed countries that tend to have expensive and skilled labor force and demanding consumers. As predicted, Korean MNCs investing in developing countries are more labor-intensive than those investing in developed countries.

The empirical evidence suggests that firm differences between these two investor groups in building an FDI theory for Third World MNCs should be considered. However, it is not known whether this evidence may be applicable to other Third World MNCs because previous research on Third World MNCs has not addressed this research issue. Moreover, the findings do suggest that the more labor-intensive firms will never invest in developed countries. As shown in table 16, a few Korean firms have invested in labor-intensive industries in DCs. However, because of data limitations, the present study does not tell whether these firms developed a capital-intensive technology prior to investing in developed countries or whether other factors drove their investment in developed countries. Therefore, in order to draw firm conclusions, more studies should be conducted to investigate these research issues.

Overall Theoretical Implications

The findings of the study imply that the determinants of FDI that influence the traditional MNCs may differ from
those that influence Third World MNCs. Therefore, the existing FDI theories appear to have limitations in explaining the FDI behavior of Third World MNCs since those theories are heavily aimed at the FDI activities of the traditional MNCs. We should develop a separate theoretical framework to expound the FDI activities of Third World MNCs.

A theoretical framework for Third World MNCs can be developed based on the results of this research. However, as stated previously, this study provide only limited foundation to build an FDI theory for Third World MNCs. We need more evidence supporting the results of this research in order to build a sound theoretical framework. In addition, the proposed research investigated only firm- and host country-specific factors that influence the FDI activities of Third World MNCs; however, there may be other factors affecting these activities. To be a viable FDI theory, the new theoretical framework for Third World MNCs should ultimately encompass all important variables that influence the FDI decisions of Third World MNCs. The foregoing contentions suggest the need for more research on Third World MNCs.

Managerial Implications

The results of the research suggest that Third World MNCs lack the skills and capabilities to compete head on with the traditional MNCs. The results also imply that
Third World MNCs will be prevalent in price-sensitive market segments where product differentiation is not important. Therefore, it can be concluded that Third World MNCs are still not direct threats to the traditional MNCs although a few exceptions may exist.

The findings, however, have important managerial implications for Third World MNCs because we could expect that the FDI activities of developing countries will increase as the level of economic development in these countries improves. This means that the price-sensitive, low-end world market segments, where Third World MNCs are prevalent, will become more competitive because of the emerging new challengers. Therefore, the existing Third World MNCs should make an appropriate strategic movement in order to succeed or to survive. Otherwise, the existing Third World MNCs may not survive in the foreseeable future. There are several possible strategic movements available for the existing Third World MNCs.

First, they can move into high-end market segments where the traditional MNCs have dominated. However, this strategy might be feasible only to a few Third World MNCs that can make substantial investment in R&D and advertising.

Second, they should develop more efficient production processes in order to retain their competitive advantage. Since this strategy requires fewer resources than the previous strategy, most Third World MNCs can pursue this
strategy.

The appropriate strategy must be selected based on the firm's resources and capabilities and competitive environment. To be successful, managers of Third World MNCs must allocate enough resources, and they should have long-term strategic focus and commitment.

**Limitations of the Empirical Findings**

This is the first study that empirically tests specific hypotheses on the FDI activities of Third World MNCs with firm-level data. Previous studies on Third World MNCs were descriptive in nature. Furthermore, those studies used industry-level data to explain the FDI behavior of Third World MNCs, although theory development has been at the firm level. Therefore, we can argue that the results of this study are more realistic than those of previous research because the study provides more specific information about the FDI behavior of individual firms. Nevertheless, the findings of this study should be interpreted with caution for several reasons.

First, it is possible that some of the research findings may not be generalizable since the measurement of the dependent variable and independent variables of this study differs from previous research. Previous studies on Third World MNCs did not use firm-level data. We cannot be sure whether the results of studies based on industry-level
data are consistent with those based on firm-level data because even firms in the same industry differ from each other (Nelson 1991; Carroll 1993).

Second, the impact of some firm-specific variables and location-specific variables on the magnitude of the FDI of Third World MNCs was investigated for the first time in this research. In fact, the present study assumed that Korean MNCs will be attracted by the same location-specific variables that attracted the traditional MNCs. Therefore, the results on these variables should be treated as exploratory in nature.

Third, this research investigates only Korean MNCs. Hence, some results may not be generalizable to other Third World MNCs.

Finally, there is a limitation related to the FDI data of Korean MNCs. The Bank of Korea reports only the total initial foreign direct investment of an individual Korean firm that is needed for establishing and operating foreign subsidiaries. However, the FDI data of the present study does not tell the additional investment amount if the investment is self-generated through the operation of foreign subsidiaries. Therefore, the findings should be limited to the initial amount of FDI.

This may not be a significant problem of this research for two reasons. First, the present study concerns only the factors that influence the initial amount of FDI made by
Korean MNCs. Second, the existing FDI theories do not attempt to explain the reinvestment behavior of MNCs. Because factors that influence the initial investment of MNCs may not be influential in the case of additional investment, an FDI theory of reinvestment may need to be developed.

**Proposition for Future Research**

It is expected that the role of Third World MNCs in the world economy will increase because the economies of developing countries will continue to improve. Therefore, academicians must devote more efforts to investigating the FDI activities of Third World MNCs. Several important research areas need immediate attention.

First, it is necessary for the international business discipline to have a foreign direct investment theory for Third World MNCs. In order to develop a sound FDI theory for Third World MNCs, the FDI behavior of Third World MNCs other than Korean MNCs must be investigated with the comparable data. These investigations will provide a more precise picture regarding the FDI activities of Third World MNCs.

Second, the reinvestment and divestment activities of individual Third World MNCs must be analyzed if the appropriate data are available. In doing so, we may find the factors that influence the subsequent strategic
movements of Third World MNCs after they make the initial FDI. These findings will definitely improve our understanding of the FDI behavior of Third World MNCs.

Third, as seen in the results, the characteristics of Third World MNCs are different from those of the traditional MNCs. One important question to ask is whether the unique characteristics of Third World MNCs are transient or permanent (Chen 1981). It may be argued that the characteristics of Third World MNCs will change over time, and that eventually they will behave very much like the traditional MNCs. On the other hand, we may contend that Third World MNCs will not undergo changes and will retain their unique characteristics.

The answer for this question has very significant theoretical and strategic implications. If Third World MNCs eventually behave like the traditional MNCs, the existing FDI theories can explain the FDI behavior of Third World MNCs by incorporating the transient characteristics of Third World MNCs to the theories. Otherwise, an FDI theory for Third World MNCs must be developed.

Strategically, Third World MNCs will become direct threats to the traditional MNCs if Third World MNCs become much more like the traditional MNCs, because the most dangerous competitors for a firm are those that most resemble that firm (Henderson 1989). Third World MNCs will be able to compete directly in the market segments where the
traditional MNCs have dominated if they can possess monopolistic advantages based on advanced technology and brand identities created by investment in R&D and advertising.

The answer for this question should be based on empirical research. Therefore, we should conduct longitudinal studies to discover whether Third World MNCs will undergo changes and/or how they change.

Fourth, as this study finds, the characteristics of Third World MNCs investing in developing countries differs from those investing in developed countries. Because the previous research on Third World MNCs has neglected this issue, only one firm characteristic is investigated in this research. However, there might be additional firm characteristics that can differentiate the previously identified groups of Korean manufacturing MNCs. Moreover, it is possible that the finding of this study may not be applicable to all Third World MNCs. Therefore, we need more research in this area to answer the foregoing questions.

Fifth, both the present study and previous studies indicate that primary source of competitive advantage of Third World MNCs is the low-cost/low-price advantage. However, this study did not directly measure this advantage because of data limitations. Future research should actively develop measures for this and should test the relationship between FDI and low-cost/low-price advantage.
Sixth, future research should investigate the determinants of entry mode by Third World MNCs. Although previous research reports that a joint venture is the preferred entry mode of Third World MNCs (Wells 1983; Jo 1981), the entry mode choice of Third World MNCs yet to be rigorously investigated. Specifically, previous research did not investigate the factors that influence differing entry mode choices (e.g., licensing, minority joint venture, majority joint venture, and wholly owned subsidiary) by Third World MNCs. Since the entry mode choice is an important part of FDI decisions, future research should focus on this area.

Finally, the factors that influence the FDI decisions of nonmanufacturing industry sectors may differ from those that influence the FDI decisions of manufacturing industry sectors. Therefore, we must examine the FDI behavior of nonmanufacturing sectors (e.g., the service industry) because Third World MNCs engage in foreign direct investment other than manufacturing industry sectors.

**Summary of Chapter 5**

This chapter has discussed the theoretical and managerial implications of the empirical findings of the proposed study. The empirical results suggest the necessity of developing an FDI theory for Third World MNCs that can explain the FDI behavior of Third World MNCs. The existing
FDI theories that aim exclusively at the FDI behavior of the traditional MNCs seem to have little explanatory power for Third World MNCs.

The empirical findings also imply that Third World MNCs are not direct threats to the traditional MNCs at the present time. However, it is possible that Third World MNCs could become direct threats to the traditional MNCs in the future. Therefore, we contend that managers of the traditional MNCs should monitor the FDI activities of Third World MNCs closely.

Some critical research issues are raised to encourage more research on Third World MNCs. These issues suggest that we need substantial future research on the FDI activities of Third World MNCs in order to develop a sound FDI theory for them. This theory will contribute significantly to the progress of scientific knowledge in the international marketing discipline.
APPENDIX I

LIST OF DEVELOPING AND DEVELOPED COUNTRIES
<table>
<thead>
<tr>
<th>Country</th>
<th>Developing Country</th>
<th>Developed Country</th>
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<tbody>
<tr>
<td>Australia</td>
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<td>Bangladesh</td>
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<td>United States</td>
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