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국제학석사학위논문

# **ODI Strategies of Korea: In Comparison with Emerging and Advanced Markets**

한국기업의 신흥국과 선진국에서의 해외직접투자전략:  
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國際學科 國際通商專攻

南 允 註

# **ODI Strategies of Korea: In Comparison with Emerging and Advanced Markets**

Thesis Presented

By

Yun Joo Nam

to

Graduate Program in International Commerce

In Partial Fulfillment of Requirements

For the Degree of Masters

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**Graduate School of International Studies**

**Seoul National University**

**Seoul, Republic of Korea**

# THESIS ACCEPTANCE CERTIFICATE

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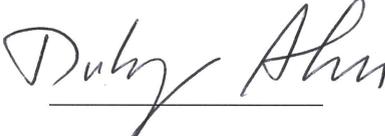
## **ODI Strategies of Korea: In Comparison with Emerging and Advanced Markets**

Presented by **Yun Joo Nam**

Candidate for the degree of Masters of Art in International Studies and hereby certify that it is  
worthy of acceptance

Signature

Committee Chair



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Committee Vice Chair



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## **Abstract**

# **ODI Strategies of Korea: In Comparison with Emerging and Advanced Markets**

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Global economic integration through trade, factor movements, and communication of economically useful knowledge and technology has been a generally rising trend worldwide. The establishment of the World Trade Organization further enriched the quality of life of global citizens. The aim of this thesis is to investigate the effect of Korea Outward Direct Investment in China, India, Japan and the US in light industry and heavy-chemical industry. This paper seeks to analyze the Republic of Korea's trade pattern and outward direct investment (ODI) patterns from 2001 to 2010 in emerging and advanced economy which are the outputs of our longtime desire. Outward Direct Investment is considered to be an alternative means available to the firms to give them particular opportunities to acquire international resources and capitals. As a result of these economic integrations, many countries have started to invest in foreign nations in order to look out for their own interest and benefits. Korea is one example of that looks out for its own interest and benefits in international markets where natural resources, human capitals, dynamic market benefits are abundant.

I researched the relationship between Korea's foreign investment and labor costs, and tried to find how Korea's foreign investment affected Korean industries market shares. Generally, it showed that Korea's light industry investment in emerging economies was affected by emerging economies' labor prices while Korea's heavy-chemical industry investment in emerging economies was not affected by emerging economies' labor prices. Interestingly, investments in Japan for both light and heavy-chemical industries from Korea were not affected by the Japanese high labor costs while Korean light and heavy-chemical industries investments in the US were both affected by the US high labor costs.

In addition, Korean firms' market shares in both emerging and advanced economies showed similar patterns. It was shown that in all four countries any of Korean firm's foreign investment has insignificant effect on foreign market shares. ODI is one marketing tool used by firms in global business strategy.

Trade policy, economic policy, public policy, exchange rate, interest rate, consumption pattern, consumer taste, and economic growth rate are the important factors with significant influence on the increase in Korean firms' global market shares. In four economies, their GDP growth rate is a positive contributor in the increase of foreign market share. In order to survive in world markets, Korean manufacturers must produce good-quality products with low prices, and develop competitive marketing strategies. Moreover, strategic currency strategies must be used to reduce risks from currency wars among nations.

**Keywords:** Outward Direct Investment, trade, labor cost, GDP growth rate, trade policy, exchange rate, China, India, Japan, US

**Student Number:** 2013-22036

## Table of Contents

Abstract (English) -----	i
1. Introduction-----	1
2. Literature Review -----	4
3. Overview of South Korea Economy -----	8
3.1) GNI, GDP, Economic Growth Rate -----	10
3.2) Korea Export, Import, Trade Balance-----	13
3.3) Korea EX-IM to(from) China, India, Japan, US -----	17
4. Emerging and Advanced Economies Three Major Industries-----	20
5. Korea Outward Direct Investment-----	24
6. Data and Methodology -----	27
6.1) Regression Analysis: China -----	28
6.2) Regression Analysis: India -----	32
6.3) Regression Analysis: Japan -----	36
6.4) Regression Analysis: US -----	40
7. Comparison and Implications -----	45
8. Conclusion-----	49
Bibliography-----	52
Abstract (Korean)-----	54

# 1. Introduction

This paper analyzes the Republic of Korea's trade and outward direct investment (ODI) patterns from 2001 to 2010 in emerging and advanced economy. Outward Direct Investment can be viewed as one of the alternative means available to firms for picking up a particular opportunity and, more precisely, for acquiring an internationally non-transferable "foreign asset" in an indirect way. For these reasons, Korea has been showing increasing trend of ODI pattern in investments in both emerging and advanced economy. According to the Export-Import Bank of Korea, Korea's total volume of direct investment in abroad was \$ 2,380,132,000 US Dollars in 1990, \$ 6,236,634,000 US Dollars in 2000, \$ 9,805,613,000 US Dollars in 2005, and \$ 34,441,989,000 US Dollars in 2010 respectively. We can easily think that the main purpose of abroad investments for firms is using foreign human capital in relatively cheap prices. We can simply conclude that Korean firms do ODI in order to 1) increase foreign market share 2) decrease transportation revenue 3) study foreign market demand.

Though we generally theorize that firms are attracted by emerging economies' cheap abundant labor force, however, data has shown that firms' motivation for ODI cannot be simply limited to this general convention. Rather this paper asserts that there exist other motifs for Korean firms to invest in economies where they are no longer attracted by low labor costs. For example, Korea's ODI in North America was 23% in 2000, and 18% in 2010. Also, its ODI in Asia was 38% in 2000 and 41% in 2010. Although ODI in North America shows a decreasing trend, it still accounts for one-fourth of Korea's total ODI. If we exclude labor and other natural resources such as transportation revenue, what could another driving force for Korean companies to invest in developed economy be; it could be another asset, such as firm-specific knowledge or organizational models. Increasing ODI trend supports our second assertion is that firms are not only attracted by labor cost but also other assets listed

above. In US, labor cost in 2001 was \$26.22 and \$35.67 in 2012. Although US labor payment is high, Korean firms ODI for Korean firms in North American has shown increasing trend from 15% in 2005 to 19% in 2013.

We can conclude that companies ODI motivations in developing countries are low labor costs and to increase market share while for companies abroad investment motivations in developed countries is to increase market share though they are disadvantaged by high labor costs. This paper examines how several economic variables shape Korea's ODI pattern in developing and developed economies.

In this paper, I am going to study how variables affect Korean firms' market share in abroad: foreign countries' GDP growth rate, exchange rate, GNI per capita, labor price, ODI, etc. I divided Korean firms into two levels: light and heavy-chemical industry. This paper is composed of two hypotheses. First part of hypothesis figures out the correlation between labor costs and ODI, and it is divided into three parts:

**Hypothesis 1.1) Labor-intensive Korean light industry will be attracted by emerging economies' relatively cheap labor prices.**

**Hypothesis 1.2) Capital-intensive Korean heavy-chemical industry will not be attracted by emerging economies' relatively cheap labor prices.**

**Hypothesis 1.3) The purpose of Korean firms' foreign investment in advanced economy is to expand markets, disperse risk, so, they will invest regardless of advanced economy's labor prices.**

In the second part of hypothesis, I investigate how the variables listed above affect Korean firms' market share in foreign economies. Moreover, since Korea has not only invested in emerging economy, I also looked at advanced economy as well to seek results related to how Korean firms' do different ODI strategies in two different

economies as how variables affect to shape market share in abroad.

**Hypothesis 2) Regardless which industry, the Korean firms' ODI will increase their foreign market shares.**

For the data analysis, I used STATA to find correlation between y variables and x variables. Data analysis is divided into two parts. In first part, I examined the correlation between labor costs and ODI at two different industry levels in emerging and advanced markets. In second part, I examined the correlation between Korean firms' market shares and ODI. X variables in second analysis include Korea's GDP growth rate, exchange rate, ODI volume, foreign countries GDP growth rate, and foreign GNI per capita.

The main goal of this paper is to figure out how much Korean light and heavy-chemical industries' ODI affected their market shares in emerging economy such as China and India and in advanced economy such as Japan and the US. In addition, I am going to test the correlation between labor cost and each industry ODI.

The paper is structured as follows: section 3 analyses the overview of Republic of Korea's economy: GDP growth, export and import, and trade balance from 2001 to 2010. Section 4 analyses ratio of Korea's three main industries' export to total export volume from 2001 to 2010 (light industry, heavy metal and chemical industry, IT industry). Section 5 analyses Korea's Outward Direct Investment (ODI) trend in 2001, 2005, and 2010. In section 6, data and methodology is demonstrated and data analysis is described. Lastly, in section 7, four economies comparison and implications will be explained and then conclusion will be followed in section 8.

## **2. Literature review**

### 1) Determinants of FDI survival: The case of Korean manufacturing firms

This study examines the determinants of FDI survival of Korean manufacturing firms. Transaction cost theory was employed in order to analyze the relationships of both the market transaction cost and organizational management cost with the survival length of affiliates. The author divided factors into three levels which are transaction cost factors, management cost factors, and control variable factors.

Transaction cost factors include company proprietary knowledge, exit barriers, and parent's reputation. Company proprietary knowledge and exit barriers have shown not significant impact on its affiliate's survival while parent's reputation has significant impact on its affiliate's survival.

Management cost factors include the commonality of the affiliate's products with those of its parents, political risks, international experience, and cultural distance. The commonality of the affiliate's products with those of its parent, political risks, and international experience have shown to have an impact while cultural distance has no significant impact on its affiliate's survival.

Control variable factors include size of the host country's market (GDP), financial problems of the parent, parents' size, and exchange rate. Size of the host country's market (GDP) and financial problems of the parent have shown not significant impact while parent's size and exchange rate has a significant impact on its affiliate's survival. Thus, Joint ventures are more unstable than wholly-owned affiliates

## 2) Trade and Foreign Direct Investment Patterns in the Republic of Korea in the Aftermath of the 1997 Asian Financial Crisis

This paper investigates movements in Korea's trade and foreign direct investment patterns including its outward direct investment following the 1997 Asian financial crisis. Korea's ODI began to surge from the mid-1980s, when the economy had a significant surplus on the current account, largely due to a favorable exchange rate and low interest rates in the global capital market. Korea's ODI was led largely by labor-intensive and small and medium-sized (less than \$300,000) manufacturing companies, particularly since the mid-1980s. Manufacturing's share of total ODI increased from 26.4% in 1986 to 56.5% in 1996. The surge in wages was the main driving force for the exodus in textiles, clothing and primary and fabricated metals. ODI to China particularly rose sharply because of geographical proximity and low labor costs in small and medium-sized firms, followed by ODI to the US, Hong Kong, and Viet Nam. The share of China in total ODI fluctuated between 15% in 2001 and 47% in 2003. In contrast to manufacturing-led ODI to Asia, trading companies led Korea's ODI to North America and European Union. However, recently, wage costs have risen in China as the economy has maintained high growth. As a result, investment in Viet Nam and North Korea has increased.

## 3) An Empirical Analysis on the Utilization Efficiency of FDI in China

This paper investigates FDI efficiency in China and demonstrates current FDI status in China. The foreign direct investment has become one of the key issues for economy development. Taking economic reform and open door policy boomed up Chinese economy and brought China into next global rising power. Moreover, under the stream of economic globalization, especially after joining into WTO in 2001, Chinese volume of utilization of foreign capital has rapidly increased much more. Thus, total volume of joint-venture in China exceeded that of US in 2003. Then China

became first nation that brought most foreign direct investment in the world. As most foreign direct investment converged in China, how to use foreign capital effectively and how to evaluate its utilization efficiency became one of main issues in the economic analysis. In this article, the author focuses on empirical evaluation about the utilization efficiency of economic benefit, technological spillover, industry restructuring, employment and tax revenue of FDI in China. The paper reveals that it is verified that the main effecting factors to FDI utilization efficiency in Chinese economy follow: the effect of economic growth, increasing trade volume, industrial restructuring, employment and income increasing, fiscal revenue increasing and technology spillover.

An empirical data analysis proves the highest utilization efficiency of FDI during the period of 2001, 2005, and 2011. They found increasing trend of efficiency of scale in year of 2002, 2004, and 2009, constant trend of efficiency in year of 2006, 2007, and 2010, and diminishing of utilization efficiency of FDI in year of 2001, 2007, 2008, and 2010. The main factors affecting the utilization efficiency of FDI in China could be industrial structure, public service and management level, the level of social economic development, the level of environmental constraint. In addition, the main effecting factors in terms of utilization efficiency to the FDI size include the level of social economic development, fiscal policy, the degree of environmental constraints, and innovation capability.

#### 4) Sources of economic growth in South Korea: an application of the ARDL analysis in the presence of structural breaks – 1980-2005

The primary objective of this paper is to examine the major determinants of GDP growth in South Korea using quarterly time series data that focuses on the contribution of investment, trade and human capital, covering the period 1980Q1 to 2005Q3. The time series properties of the data are analyzed using the Zivot-Andrews

model. The empirical results derived indicate that there is insufficient evidence against the null hypothesis of unit roots for all of the variables. The Gregory-Hansen co-integration which allows the presence of potential structural breaks in the data was found to reject the null hypothesis of no co-integration relationship in favor of the existence of at least one co-integration relation in the presence of single structural breaks in the system. By applying these methodologies, they found that most of the endogenously determined structural breaks coincide with the gradual effects of the Asian crisis on the Korean economy. Based on the preliminary empirical findings obtained they conclude that, in the long term, policies aimed at promoting various types of physical and human capital, and trade openness, have improved Korea's economic growth. In the long-run a 1% increase in physical capital does have a significant effect on the Korea GDP growth performance. In fact, empirical findings indicate that physical capital is vital to economic growth in Korea. The empirical results show that a 1% increase in human capital leads to a 0.23% rise in GDP. In this regard the efficiency of human capital can be further improved by more investment in the education sector. Similarly, 1% increase in total exports leads to a 0.37% increase in GDP. Korea's rapid export oriented economic growth strategy is conducive to economic growth. However, the results show that increases in total imports led to decreased GDP growth.

The empirical results reveal that in the long run physical investment, human capital (education), trade openness and technological innovations will improve economic growth in Korea.

### **3. Overview of South Korea Economy**

Since the 1960s, South Korea has achieved an incredible record of growth and global integration to become a high-tech industrialized economy. In 1960s, GDP per capita was comparable with in the poorer countries of African and Asia. However, in 2004 Korea joined the trillion-dollar club of world economy and now it is among the world's 20th largest economy. The Korean government promoted the import of raw materials and technology at the expense of consumer goods, and encouraged savings and investment over consumption.

Prior to the IMF economic crisis of 1998, Korea's impressive growth performance was part of what has been described as the "East Asian miracle." The three decades of extraordinary growth transformed Korea from one of the poorest economies to the world's 11th largest economy and exporting country. Korea's rapid development was driven by citizens' high rates of savings and investment and a strong emphasis on education, which boosted the number of young people enrolled in universities to among the highest levels in the world. From 1953 to 1996, Korea's gross national product increased from US\$2.3 billion to US\$480.2 billion, with per capita GNP rising from US\$67 to US\$10,543. Over those years of rapid development, Korea's industrial structure has been drastically transformed. The economy that in the past largely depended on agriculture currently boasts a sizable manufacturing sector, which accounts for over 25.7% of Korea's GDP in 1997. The commodity trade volume reached more than US\$274.9 billion in 1996, in contrast to US\$477 million in 1962. The gross savings ratio rose to 34.8 % from 11.0 % during the same period. Korea had also experienced financial hardship in 1997 and 1998. The Asian financial crisis exposed longstanding weaknesses in Korea's development model including high debt and equity ratios and massive short-term foreign borrowing. GDP plunged by 6.9% in 1998, and the recovered by 9% in 1999. Korea adopted numerous economic reforms

following the crisis including greater openness to foreign investment and imports. As a result, growth rate moderated to about 4-5% between 2003 and 2007. However, with the global economic crisis in 2008, Korea GDP growth slowed to 0.2% in 2009 but it recovered due to export growth, low interest rates, and an expansionary fiscal policy, thus, growth exceeded 6% in 2010.

“Korea’s services, industry and agriculture account for 57.5 %, 39.8%, and 2.7% of Korea’s GDP respectively.” (Embassy of India) The economic transformation has been achieved despite Korea’s high dependence on import of natural resources such as crude oil and essential minerals. Korea became the 29th member country of the Organization for Economic Cooperation and Development (OECD) in 1996. Its foreign trade surpassed \$ 1 trillion in 2012. Its share of world exports and imports in 2013 was 3.1% and 2.8% respectively. Its global trade in 2013 was US\$ 1,075.2 billion with a surplus of US\$ 44.2 billion. Its exports rose by 2.2% to \$559.7billion and imports edged down 0.8% to \$515.5 billion. Over 40% of Korea’s trade is with China, USA and Japan. Korea’s other major trading partners are Saudi Arabia, Hong Kong, Singapore, Australia, Indonesia, Taiwan and Germany. However, Korea economy’s long term challenges will include a rapidly aging population, inflexible labor market, and overdependence on manufacturing exports to drive economic growth.

In section 3, the Republic of Korea’s yearly macroeconomic indexes will be analyzed. It will be done so, conducting an overview of Korea’s GDP growth, investment trends, trade development and trade balance from 2001 to 2010.

## GNI, GDP and Economic Growth rate

Table 1.1<sup>1</sup>

	GDP		GNI		GNI per capita		Economic Growth Rate (%)		GDP Deflator (%)	
	100million (won)	One hundred million\$	100million (won)	One hundred million\$	10000 (won)	\$	GDP	GNI	Increase rate	Index
2001	6,514,153	5,046	6,498,989	5,035	1,372	10,631	4.0	3.3	3.9	90.2
2002	7,205,390	5,759	7,209,963	5,762	1,514	12,100	7.2	7.5	3.2	93.1
2003	7,671,137	6,436	7,677,714	6,442	1,604	13,460	2.8	2.5	3.5	96.4
2004	8,268,927	7,224	8,293,267	7,245	1,726	15,082	4.6	3.7	3.1	99.4
2005	8,652,409	8,447	8,644,273	8,439	1,796	17,531	4.0	2.0	0.6	100.0
2006	9,087,438	9,511	9,101,342	9,525	1,884	19,722	5.2	3.9	Δ0.1	99.9
2007	9,750,130	10,493	9,768,139	10,512	2,016	21,695	5.1	4.8	2.0	101.9
2008	10,264,518	9,310	10,341,154	9,379	2,128	19,296	2.3	Δ0.6	2.9	104.9
2009	10,650,368	8,344	10,697,831	8,381	2,195	17,193	0.3	1.6	3.4	108.5
2010	11,728,034	10,143	11,731,234	10,146	2,400	20,759	6.2	5.5	3.7	112.5

Table 1.1 summarizes the Republic of Korea's macro-economy from 2001 to 2010. Gross Domestic Product is a measure of the size of an economy. Usually it is defined as an aggregate measure of production equal to the sum of the gross values added of all resident, institutional units engaged in production. GDP estimates are commonly used to measure the economic performance of a whole country or region, but can also measure the relative contribution of an industry sector. The gross national income (GNI) is the total domestic and foreign output claimed by residents of a country, consisting of gross domestic product (GDP) plus factor incomes earned by foreign

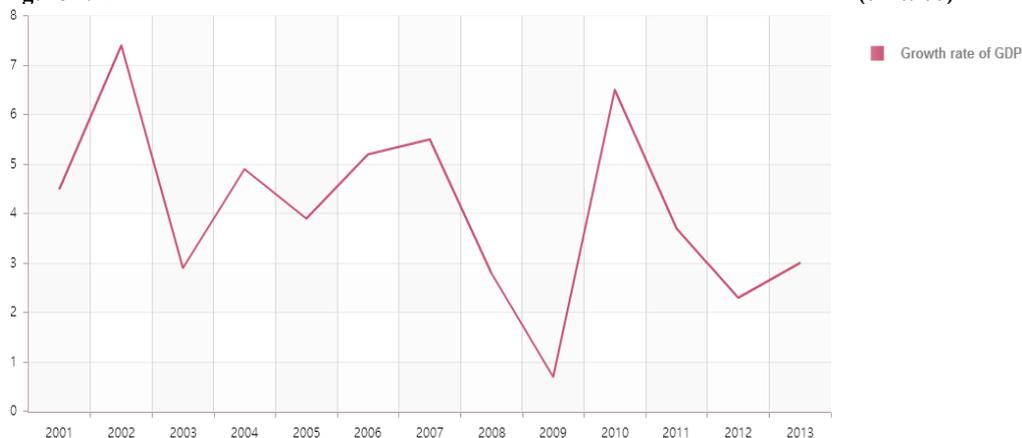
<sup>1</sup> Ministry of Strategy and Finance, South Korea

residents, minus income earned in the domestic economy by nonresidents. The main difference between the two is that the Gross Domestic Product is based on location, while Gross National Income is based on ownership. It can also be said that GDP is the value produced within a country's borders, whereas the GNI is the value produced by all the citizens.

The table indicates that GDP in 2001 \$ 504600 million US dollars in 2010 \$ 1014300 million US dollars which doubled in one decade. The Korean economy has experienced steady growth since 2000, however, now the economy is expected to have an average growth of 2.6%. Most economists forecast that it will show decreasing trend and Korea will no longer able to be the one described as the “East Asian miracle.”

## GDP Growth rate

Figure 1.12



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<sup>2</sup> The Bank of Korea

Figure 1.1 describes the Republic of Korea's GDP growth rate from 2001 to 2013. GDP Growth Rate in South Korea averaged 1.68% from 1970 until 2015, reaching the highest of 6.8% in the first quarter of 1988 and a record low of -7% in the first quarter of 1998 (The bank of Korea). The growth rate keeps overall increasing trend from 2001 to 2007 although there was a big drop in 2003. However, it significantly drops in 2008 and 2009 with rates of 2.8% and 0.7% respectively. The GDP growth rate recovers back to 6.5% which is the second highest between 2001 and 2013. The US Subprime mortgage crisis in 2007 and Lehman brothers' bankruptcy in 2008 broke down Korean economy that was highly relied on the US financial market.

Korean banks depended heavily on loans (including foreign loans) to finance their lending activity which is evident by the high loan-to-deposit rates, which reached 130%, the highest in East Asia (Shirai). This high loan reflects that Korean households shifted some of their financial assets from deposits to portfolio investment. Currency and deposits accounted for 43% of Korean individual financial assets in 2007 which had dropped from 54% in 2002 (Shirai). The ratio of currency and deposits to total individual financial assets exceeded those in US that accounts of 13%. As a result, Korea's outstanding external liabilities rose from \$260 billion in the fourth quarter of 2007 to \$412 billion in the first quarter of 2008 (Shirai). The large debt exposure came from banks in the United Kingdom, France and Germany, followed by the United States. The growing dependence on financing made Korean banks vulnerable to liquidity risks and external financial conditions. Following the Asian financial crisis in late 90's, South Korea economy grew at an average 1.1% fueled by exports, which account for half of its GDP. South Korea is the world's leading producer of displays and memory semiconductors and the second largest shipbuilding producer. Yet, the high reliance on exports together with a limited domestic market and a rapidly aging population are the main threats to the future growth in Korea.

## Korea Export, Import, and Trade Balance

Table 1.3<sup>3</sup>

(unit: \$ million, %)

	Export		Import		Trade Balance
		Increase Rate		Increase Rate	
2001	150,439	-12.7	141,098	-12.1	9,341
2002	162,471	8.0	152,126	7.8	10,344
2003	193,817	19.3	178,827	17.6	14,991
2004	253,845	31.0	224,463	25.5	29,382
2005	284,419	12.2	261,150	16.3	23,180
2006	325,465	14.4	309,383	18.4	16,082
2007	371,489	14.1	356,846	15.3	14,643
2008	422,007	13.6	435,275	22.0	-13,267
2009	363,534	-13.9	323,085	-25.8	39,709
2010	466,384	28.3	425,212	31.6	41,172

Figure 2 explains export, import, and trade balance of Korea from 2001 to 2010. South Korean economy is the 11th largest economy in the world and the third largest in Asia. South Korea's economic growth in the last 60 years has been incredible. Following the Korean War (1950-1953), South Korea was one of the poorest countries in the world. During 1953-1961 the economy experienced a slow economic recovery

<sup>3</sup> Ministry of Strategy and Finance, South Korea

and remained heavily dependent on assistance from the US. In the following decades South Korea developed light industry, consumer products and heavy industry. South Korean economy was further boosted in 1988 because of the Seoul Olympics. Seoul Olympics was the turning point for Korea to further expand its export market and made-in Korea products in the world. Beginning of the 21st century, South Korea became one of leading countries in the IT industry following the US and India. Leading firms in this sector are Samsung Electronics and LG Electronics. As for exports, South Korea has established itself as a main provider of semiconductors in addition to exporting various IT products.

South Korea imports mainly mineral fuels, electric and mechanical equipment, iron and steel. South Korea's main trade partners for imports are China, Japan, the European Union and the US. South Korea's most important export partners are again China, Japan, the European Union and the US, and the products that South Korea exports are: electric and electronic goods, machinery, vehicles, ship and boats.

## Major countries GDP

Table 1.4<sup>4</sup>

(Unit: \$ Billions)

	Country	GDP
1	United States	14,657.80
2	China	5,878.26
3	Japan	5,458.87
4	Germany	3,315.64
5	France	2,582.53
6	United Kingdom	2,247.46
7	Brazil	2,090.31
8	Italy	2,055.11
9	Canada	1,574.05
10	India	1,537.97
11	Russia	1,465.08
12	Spain	1,409.95
13	Australia	1,235.54
14	Mexico	1,039.12
15	Korea	1,007.08
16	Netherlands	783.293
17	Turkey	741.853
18	Indonesia	706.735
19	Switzerland	523.772
20	Poland	468.539
21	Belgium	465.676
22	Sweden	455.848
23	Saudi Arabia	443.691
24	Taiwan	430.58
25	Norway	414.462

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4

## Korea's Top 10 Trading Partners

Table 1.5<sup>5</sup>

(Unit: \$ million)

	Country	Export	Import	Total Trade
1	China	116,838	71,574	188,412
2	Japan	28,176	64,296	92,472
3	United States	49,816	40,403	90,219
4	Saudi Arabia	4,557	26,820	31,377
5	Taiwan	14,830	13,647	28,477
6	HongKong	25,294	1,946	27,240
7	Australia	6,642	20,456	27,098
8	Germany	10,702	14,305	25,007
9	Singapore	15,244	7,850	23,094
10	Indonesia	8,897	13,986	22,883

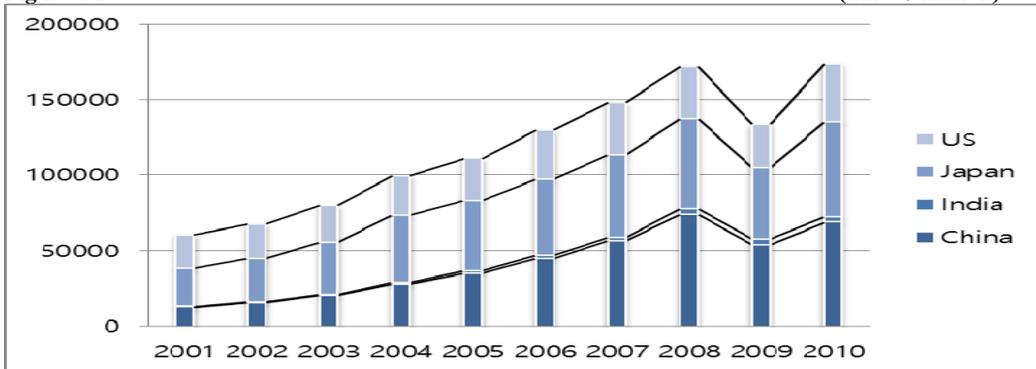
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<sup>5</sup> World Bank Database

## Korea Export to China, India, Japan, US

Figure 1.2<sup>6</sup>

(unit: \$ million)



## Korea Import from China, India, Japan, US

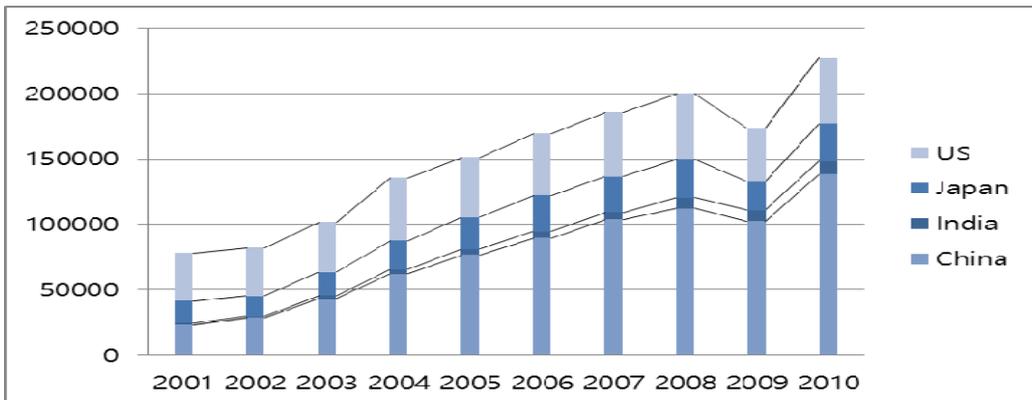


Figure 1.2 describes Korea's export and import trend in China, India, Japan and the US from 2001 to 2010. Korea's largest trading partner is China, Japan follows next and then the US follows. India is not included in Korea's main trading partner, however, in recent years Korea-India trade relationship also started to grow rapidly standing the 15<sup>th</sup> position in largest trading partners. Although Korea performed steady

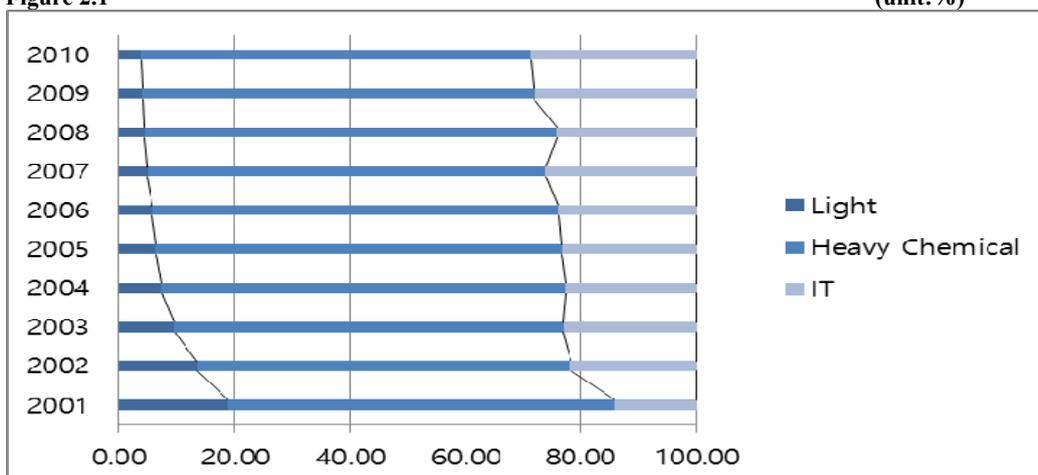
<sup>6</sup> The Bank of Korea, Economic Statistics System

increase in export and import throughout years, however, there was large decrease in 2008 and that was the cause of world's financial crisis. The US Subprime mortgage crisis in 2007 and Lehman brothers' bankruptcy in 2008 incurred Korea a credit risk that caused a sharp reduction in the supply of loans with tight credit rationing. Therefore, the situation does not only raise interest rates, but also makes borrowing more difficult at any rate. This credit crunch increases the liquidity risk of the economy and cuts down asset prices. Because of the US economic crisis, Korea also had to suffer from the breakdown of the US.

### 3.2 China Three Major Industries' Export Ratio

Figure 2.17

(unit:%)



To understand Korean firms' business behaviors in abroad, I investigated three main industries which are light, heavy-chemical, and IT industries. In order to find out which industry sector attributes the most in Korean export market. Three industries' export values are added up and then divided each sector's total volume from

<sup>7</sup> The Bank of Korea, Economic Statistics System

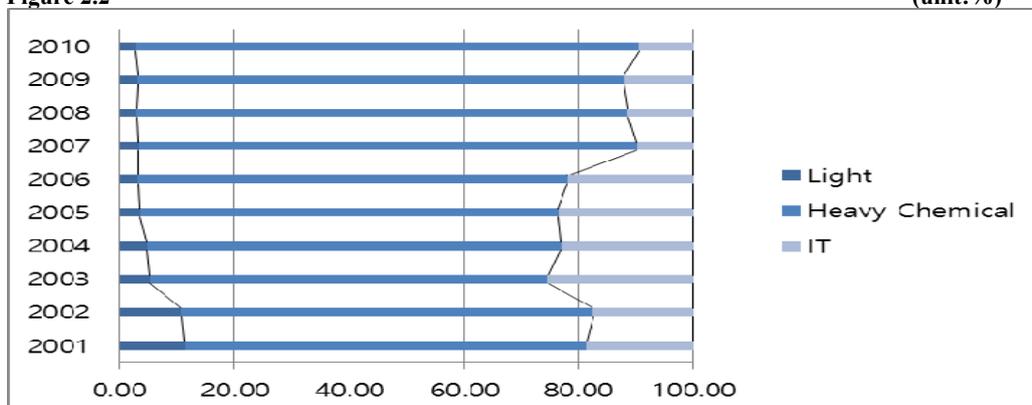
2001 to 2010. In 2001, light industry export to China accounted for 18.85%, heavy-chemical for 67.04%, and IT for 14.11%. In 2005, light industry export accounted for 6.39%, heavy-chemical for 70.25%, and IT for 23.26%. In 2010, light industry export accounted for 3.66%, heavy-chemical for 67.6%, and IT for 28.73%. In Chinese market, Korea's trade pattern has been moving toward the IT industry. In earlier days, Korea's export was mainly composed of light and heavy and chemical industries, however, as venture industry boomed up, Korea's IT industry started to contribute a lot. Among three industries, light industry sector export decreased most in China. These days, as Chinese economy emerges rapidly, they started to manufacture their own light industry products such as clothes, shoes, furniture, consumer electronics, and home appliances which they relied on import in earlier days. Yet Chinese economy is not fully developed to be self-sufficient on heavy and chemical sector, but as it is developing, Korean heavy and chemical industry must be prepared to face this change in global movement.

Chinese economy is experiencing what Korean economy had already experienced in last three decades. After Korean War, Korean light industry expanded first and then heavy and chemical industry followed next. Yet, Korean export is still relying mainly on heavy and chemical industry, we can realize IT industry will have a greater contribution in the future; IT industry in 2001 accounts only for 14% but its export size doubled in 2010 up to 29% while light industry decreased its export from 19% to 4%. China is improving its own supply capacity and therefore has reduced dependence on Korean intermediary goods; rather, Chinese firms have started producing more of the intermediary goods on their own. This Chinese self-supply give tough competition to Korean firms that China has been ramping up its own production capacity for intermediary goods and has less demand of its own for finished products because of moderated economic growth.

## 4. Emerging and Advanced Economies Three Major Industries

### India Three Major Industries' Export Ratio

Figure 2.2<sup>8</sup> (unit:%)



In the last four decades, the pattern of Korean exports to India has undergone significant transformation. Exports moved up the value chain from primary goods to light industrial products, to heavy industrial and to high-tech and knowledge-based products. One of the biggest factors that has helped India to make its mark on the global economy is its booming IT industrial sector. The contributions being made by the IT industry towards the country's GDP has led to a steady growth of the Indian economy. India's IT industry is regarded as a hub of innovators providing world class technology solutions across the globe and it helped in changing Indian economy from an agricultural based economy to a knowledge driven economy.

Though the year 2014 was full of challenges and uncertainties but the IT sector managed to achieve double digit growth rate and attained revenues of \$108 billion in 2014.

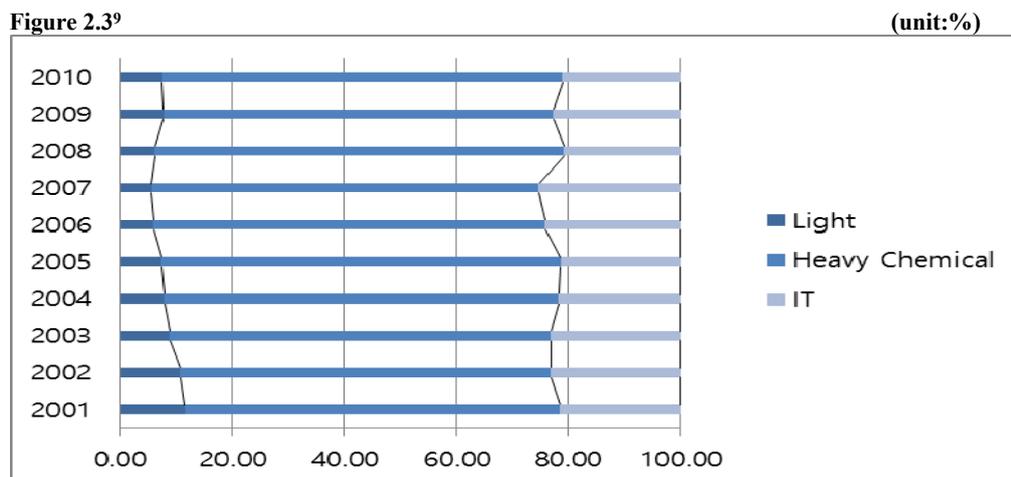
The biggest economic effect of the technologically inclined service sector in

<sup>8</sup> The Bank of Korea, Economic Statistics System

India—accounting for 40% of the country's GDP and 30% of export earnings as of 2006, while employing only 25% of its workforce: "Today, Bangalore is known as the Silicon Valley of India and contributes to 33% of Indian IT Exports (Sharma).

As it is shown above, among four countries India is the only market where Korean IT firms did not expand its market share which fell from 18.72% in 2001 to 9.55% in 2010. Moreover, like China, because Indian market itself is able to produce its own primary goods, Korea's light industry drastically falls from 11.26% in 2001 to 2.86% in 2010.

### Japan Three Major Industries' Export Ratio



South Korea's exports to Japan in 2010 were 2.2 times higher than the 1990, while imports from Japan were 3.5 times higher (Bank of Korea). Before China has become Korea's one of the largest trading partners in the 1970's and 80's, Japan was counted as major trading partner in East Asia continent. However, its significance has started to decline due to Chinese economic reform. Evidence of a significant decline in

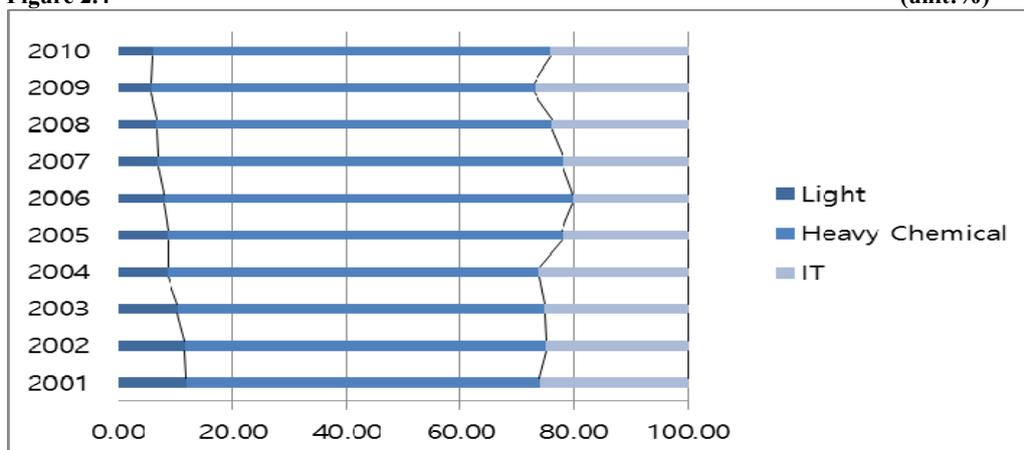
<sup>9</sup> The Bank of Korea, Economic Statistics System

Japan's presence as an export market can be found first of all in the fact that South Korea's reliance on exports to Japan fell from 11.9% in 2000 to 6.0% in 2010. Looking at trends in South Korea's exports to Japan since 2001, we find that exports to Japan have grown at a slower pace than total exports in every year except in 2010 and 2011. In addition to economic stagnation in Japan, this pattern also reflects the inability of South Korean companies to increase their market shares in Japan. Even Samsung Electronics and LG Electronics, which have become dominant in the world's electrical appliance markets, have repeatedly advanced and retreated in the Japanese market. Hyundai Motor entered the Japanese market in 2001, but sales failed to measure up to expectations, and in November 2009 it announced its withdrawal from the passenger car market. Unlike in Chinese market, Korea's export to Japan in all three industries had shown steady rates throughout years.

## US Three Major Industries' Export Ratio

Figure 2.4<sup>10</sup>

(unit:%)

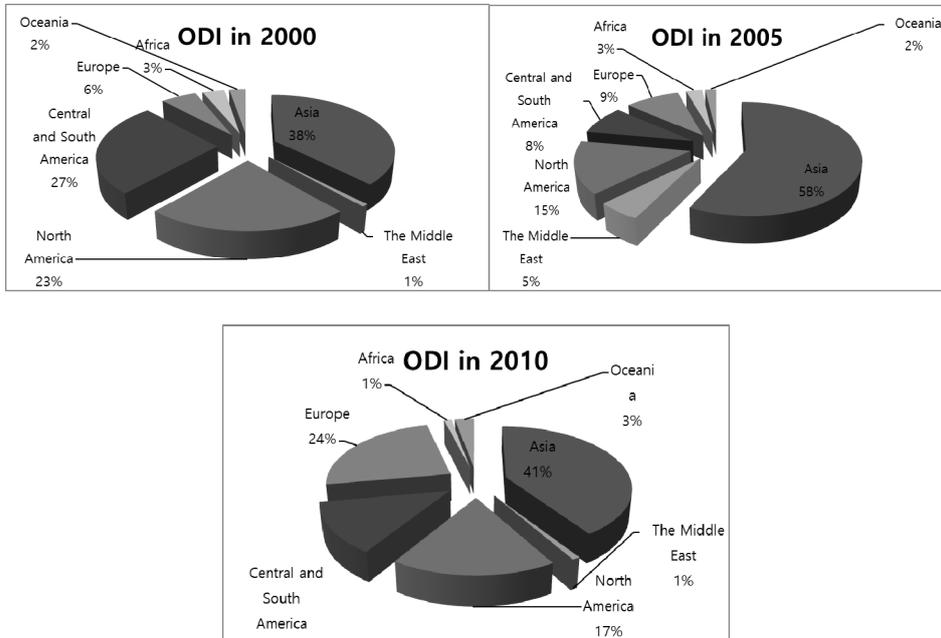


<sup>10</sup> The Bank of Korea, Economic Statistics System

The Republic of Korea was the United States' seventh-largest trading partner and the Korean economy relied heavily on the US. Korea's exports of goods to the US are worth over \$58 billion, up 79% since 2002 (Ministry of Trade, Industry and Energy). Its primary exports to the U.S. were cellular phones, cars, semiconductors, televisions, flat panel screens, and construction vehicles. Korean companies in major industries had steadily increased their market share in the US over the past few decades. The US was Korea's third largest trading partner after China and Japan, and its largest contributor of FDI. The most important the US exports to Korea were agricultural products, semiconductors, machinery, and aircraft. According to data in 2001, light industry accounted for 11.84% of Korea' total export, heavy-chemical industry accounted for 62.17%, and IT industry accounted for 25.98%. Light industry export has been showing decreasing trend that falls from 11.84% to 8.51% (from 2001 to 2005). Moreover, it further decreased to 6.05% in 2010. While light industry shows the obvious downward trend, heavy-chemical industry shows small amount of increase of 62.17% in 2001, 69.33% in 2005, and 69.76% in 2010. IT industry export trade amount did not significantly decrease which were 25.98% in 2000 and 24.19% in 2010.

## 5. Korea Outward Direct Investment

Figure 3.1<sup>11</sup>



This ODI trend from 2001 to 2010 well explains Korean firms' change of ODI motivations and supports the Dunning's three theories which are resource seeking, market seeking, and efficiency seeking.

Foreign Direct Investment can be fruitfully viewed as one of the alternative means available to the firm for picking up a particular opportunity and, more precisely, for acquiring an internationally non-transferable "foreign asset" in an indirect way. The non-internationally transferable foreign asset we are talking about could be: labor or another natural resource; a market, considered as an asset in itself. Another asset such

<sup>11</sup> The Bank of Korea, Economic Statistics System

as firm-specific knowledge or organizational models is also motivation for firms to invest in foreign countries. The most cited taxonomy of FDI motivations is the one proposed by Dunning (1993).

The taxonomy is made up of three categories:

i) Resource seeking: in this category the main aim of the MNEs is that of acquiring particular types of resources that they are not available at home (like natural resources or raw materials) or that are available at a lower cost (such as unskilled labor that is offered at a cheaper price with respect to the home country);

ii) Market seeking: in this case MNEs invest in a foreign country to exploit the possibilities granted by markets of greater dimensions. Various reasons (besides that of searching and exploiting new markets) lead to this choice by the MNEs: to follow suppliers or customers that have built foreign production facilities, to adapt goods to local needs or tastes and to save the cost of serving a market from distance. In recent times it is becoming important also to have a physical presence on the market to discourage potential competitors from occupying that market.

iii) Efficiency seeking: they are considered to occur especially in two occasions: in the first case firms “take advantage of differences in the availability and costs of traditional factor endowments in different countries”, while in the second one they “take advantage of the economies of scale and scope and of differences in consumer tastes and supply capabilities.”(Dunning, 1993, p.60)

All these three groups of motivations are considered to serve the primary objective of generating economic rents through the exploitation of some firm specific assets. In particular, FDI are motivated by the will of avoiding transportations and trade costs or by tariff jumping motives. Employing outward direct investment is a natural progression for firms as better business opportunities will be available in foreign

countries when domestic markets become too saturated.

Korea's ODI in 2001 follows: Asia 38%, North America 23%, Europe 6%, Central and South America 27%. It is not surprising that Korean firms invest the most in Asian countries which account of 38% which supports our theory that China and India are one of the most labor abundant countries. However, firms direct investment motivation is not only limited to take advantage of cheap labors (human resource) rather it is more complex than this. According to Dunning, firms also are motivated because of advantage of economies of scale and various market seeking reasons. In, 2010 ODI data supports these theories; in 2010, the percentage of Korea investments in Asia 41%, North America 17%, Europe 24%, Central and South America 13%. Although investment in North America fell by 6%, however, this number is still representing as one of the most important investment continent for Korea. Moreover, Korea's investment in Europe rose from 6% to 24% which further supports theory which firms are motivated to invest to seek for foreign markets, to study foreign customers' needs, and to advertise directly.

## 6. Data and Methodology

Data Analysis is composed of two parts using STATA. First data analysis is to find correlation between Korean firms' ODI and labor cost. I divided Korean firms into two groups which are light industry and heavy-chemical industry. ODI data was collected from the Export-Import Bank of Korea from 2001 to 2013. Labor costs for four countries were from Bureau Labor Statistics BLS has developed estimates of hourly compensation costs for employees in the Chinese and Indian manufacturing sectors.

### List of Light Industry and Heavy Chemical Industry Products

Table 2.1<sup>12</sup>

Light Industry	Heavy and Chemical Industry
Food manufactures	Petroleum & Coal products
Wood products	Chemicals
Beverages & Tobacco products	Plastics & Rubber products
Textile & Fabrics	Non-Metal mineral products
Textile Mills products	Primary metal MFG
Apparel manufacturing products	Machinery
Leather & Allied products	Computer and electronic products
Paper	Miscellaneous manufactured commodities
Printed matter & related products	Automotive products

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<sup>12</sup> World Trade Organization, Statistics Database

## Case Study: China Regression Analysis

<Index and Data Sources>

Table 2.2

	<b>Index</b>	<b>Data Source</b>
<b>Dependent variable</b>	Total ODI in China	Bank of Korea
	Labor Cost	United States Department of Labor
<b>Independent variable</b>	Korea GDP Growth Rate	Bank of Korea
	Exchange Rate	Bank of Korea
	China GNI per capita	World Bank Database
	China GDP Growth Rate	World Bank Database

<Multi-Linear Regression: Case of China ODI and Labor Cost>

Table 2.3

<b>Light Industry</b>	<b>B</b>	<b>Standard Error</b>	<b>P &gt; t</b>
<b>Labor Cost</b>	-660410.1	3020880.82	0.84
<b>Korea GDP Growth Rate</b>	27864.37	98448.63	0.79
<b>Exchange Rate</b>	-22891.17	8779.69	0.07
<b>China GNI per Capita</b>	798.25	1425.61	0.61
<b>R<sup>2</sup>=0.8111</b>			
<b>Heavy-Chemical Industry</b>	<b>B</b>	<b>Standard Error</b>	<b>P &gt; t</b>
<b>Labor Cost</b>	5952521.18	852876.80	0.006
<b>Korea GDP Growth Rate</b>	21927.64	27794.72	0.487
<b>Exchange Rate</b>	-22090.96	2478.74	0.002
<b>China GNI per Capita</b>	-2178.50	402.48	0.012
<b>R<sup>2</sup>=0.9829</b>			

$$\text{China Light Industry ODI}(y) = 1159213 + (-660410.1)*\text{Labor}(x1) + 27864.37*\text{Korea GDP G.R}(x2) + (-22891.17)*\text{ER}(x3) + 798.25*\text{China GNI}(x4)$$

$$\text{China Heavy-chemical Industry ODI}(y) = 1159213 + 5952521.18 * \text{Labor}(x1) + 21927.64 * \text{Korea GDP G.R}(x2) + (-22090.96) * \text{ER}(x3) + (-2178.50) * \text{China GNI}(x4)$$

In this section, I tried to find the correlation between China's labor cost and Korea's ODI in China. By finding their correlation, I can figure out how much labor costs would affect Korean firms' ODI volume. Thus, if the coefficient value is a positive, we can interpret that increase in labor cost will increase volume of ODI; otherwise, if the coefficient value is negative, it means that increase in labor cost will decrease volume of ODI.

According to Table 2.3,  $R^2$  is "0.8111" for light industry and "0.9829" for heavy-chemical industry which illustrate that the model can explain 81.11% and 98.29% respectively.

**Hypothesis 1.1) Labor-intensive Korean light industry will be attracted by emerging economies' relatively cheap labor prices.**

**Hypothesis 1.2) Capital-intensive Korean heavy-chemical industry will not be attracted by emerging economies' relatively cheap labor prices.**

Labor cost has negative coefficient value which illustrates that the labor price is inversely proportion to Korea light industry foreign investment. Thus, hypothesis 1.1 for China is accepted. Unlike light industry case, heavy-chemical industry ODI and Chinese labor cost have positive correlation. Heavy-chemical industry is relatively capital-intensive which will less be motivated by Chinese relatively cheap labor price. Regression analysis for Chinese heavy-chemical industry shows positive coefficient value which we can understand as Korea will still invest in China even if Chinese labor price increases. Therefore, both hypothesis 1.1 and 1.2 are accepted for Chinese case.

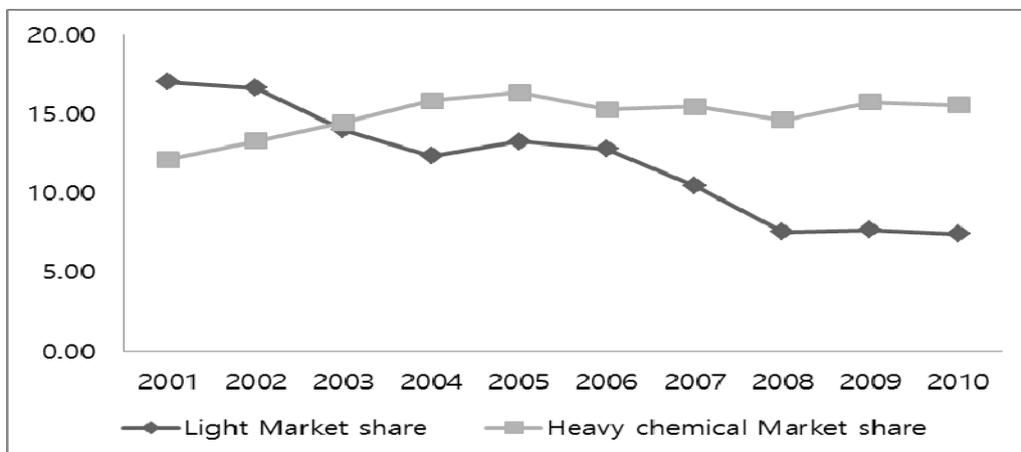
In addition to labor cost, Korea GDP growth rate has a positive coefficient against Korean firms ODI in China for both cases. The growth of Korean economy will

encourage foreign investment in China.

### Korea Light and Heavy-Chemical Industries' Market Share in China

Figure 4.1<sup>13</sup>

(unit:%)



Year	Light market share(%)	Heavy chemical market share (%)
2001	17.01	12.10
2002	16.62	13.28
2003	13.98	14.46
2004	12.33	15.82
2005	13.24	16.35
2006	12.78	15.27
2007	10.44	15.45
2008	7.55	14.60
2009	7.65	15.73
2010	7.42	15.54

<sup>13</sup> World Trade Organization, Statistics Database

<Multi-Linear Regression: Case of China ODI and Market Share>

Table 2.4

	B	Standard Error	P > t
<b>Total ODI (Light + Heavy-Chemical)</b>	-1.77E-06	3.92E-07	0.045
<b>Korea GDP Growth Rate</b>	0.074	0.088	0.486
<b>China GDP Growth Rate</b>	0.407	0.186	0.160
<b>China GNI per Capita</b>	-7.8E-06	3.92E-07	0.045
<b>Exchange rate</b>	-0.039	0.020	0.192
<b>R<sup>2</sup>=0.9872</b>			

$$\text{Market Share in China}(y) = 18.146 + (-1.77E-06)*\text{Total ODI}(x1) + 0.074*\text{Korea GDP G.R}(x2) + 0.407*\text{China GDP G.R}(x3) + (-0.039)*\text{ER}(x4) + (-7.8E-06)*\text{China GNI per capita}(x5)$$

Table 2.4 explains the correlation between Korean firms' market share in China and several independent variables such as Korea GDP growth rate, China GDP growth rate, exchange rate, labor cost, and total ODI. These variables in the model explain by 98.72%.

**Hypothesis 2) Regardless which industry, the Korean firms' ODI will increase their foreign market shares.**

According to regression result, the coefficient value of Korean firms' ODI was very minor to interpret it to have significant effect on Chinese market. Although the value of ODI was negative “-1.77E-06” which eventually has inverse relationship to market share, however, since the value has insignificant meaning to explain its effect on market share. Thus, hypothesis 2 for China is rejected.

## Case Study: India Regression Analysis

<Index and Data sources>

Table 2.5

	<b>Index</b>	<b>Data Source</b>
<b>Dependent variable</b>	Total ODI in India	Bank of Korea
	Labor Cost	United States Department of Labor
<b>Independent variable</b>	Korea GDP Growth Rate	Bank of Korea
	Exchange Rate	Bank of Korea
	India GNI per capita	World Bank Database
	India GDP Growth Rate	World Bank Database

<Multi-Linear Regression: Case of India ODI and Labor Cost>

Table 2.6

<b>Light Industry</b>	<b>B</b>	<b>Standard Error</b>	<b>P &gt; t</b>
<b>Labor Cost</b>	-100241.02	69456.86	0.208
<b>Korea GDP Growth Rate</b>	-1456.71	1699.05	0.430
<b>Exchange Rate</b>	4296.17	1659.33	0.048
<b>India GNI per Capita</b>	123.78	61.90	0.102
<b>R<sup>2</sup>=0.8453</b>			
<b>Heavy-Chemical Industry</b>	<b>B</b>	<b>Standard Error</b>	<b>P &gt; t</b>
<b>Labor Cost</b>	794743.47	1141836.00	0.517
<b>Korea GDP Growth Rate</b>	-4625.02	27931.59	0.874
<b>Exchange Rate</b>	-33120.53	27278.65	0.278
<b>India GNI per Capita</b>	-465.25	1017.72	0.666
<b>R<sup>2</sup>=0.4797</b>			

India Light Industry ODI(y) = -88389.1 + (-100241.02)\*Labor(x1) + (-1456.71)\*Korea GDP G.R(x2) + 4296.17\*ER(x3) + 123.78\*India GNI per capita(x4)

India Heavy-chemical Industry ODI(y) = 527789.9 + 794743.47\*Labor(x1) + (-

**4625.02)\*Korea GDP G.R(x2) + (-33120.53)\*ER(x3) + (-465.25)\*India GNI per capita(x4)**

According to Table 2.6, R<sup>2</sup> is “0.8453” for light industry and “0.4797” for heavy-chemical industry which illustrates that the model can explain at 84.53% and 47.97% respectively. Indian heavy-chemical industry ODI is not well explained by those above four variables. Although second case is not a reliable model with low R<sup>2</sup>, however, I will still use the model to explain the Indian labor cost and ODI relationship.

**Hypothesis 1.1) Labor-intensive Korean light industry will be attracted by emerging economies’ relatively cheap labor prices.**

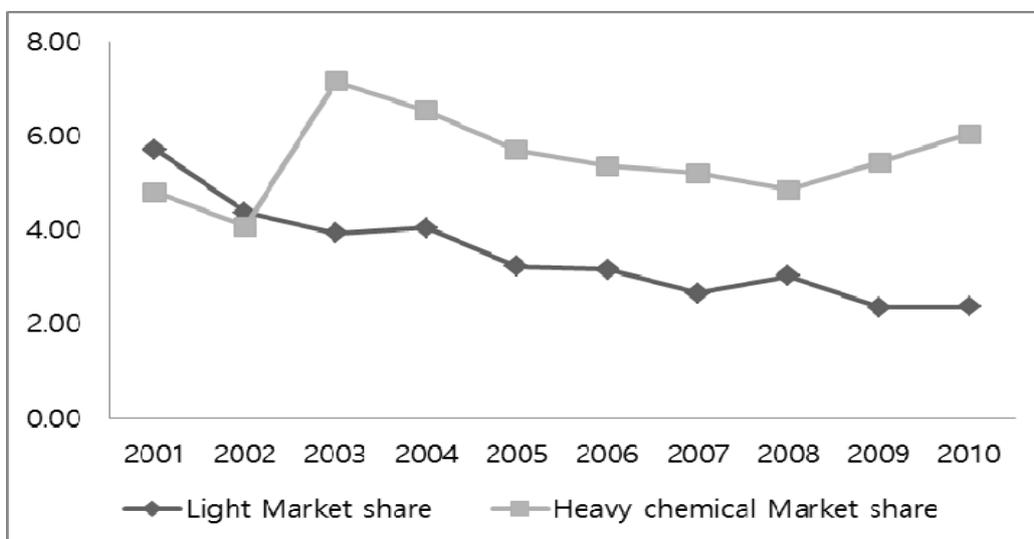
**Hypothesis 1.2) Capital-intensive Korean heavy-chemical industry will not be attracted by emerging economies’ relatively cheap labor prices.**

India is one of the emerging economies with the second most populous country. According to the United States Department of Labor statistics, Indian average hourly compensation from 2001 to 2010 was US \$1.009 which the value is the lowest among four nations (China, India, Japan, US). Thus, Korean light industry which is labor-intensive will be attracted by this relatively cheap Indian labor price. Regression result has shown, Indian labor cost has negative coefficient value of “-100241.02” which explains that the Indian labor price is inversely proportion to Korean light industry foreign investment. If Indian price increases, Korean light industry will decrease its foreign investment in India. Thus, hypothesis 1.1 for Indian case is accepted. However, unlike the light industry case, heavy-chemical industry ODI and Indian labor price have positive correlation with coefficient value of “794743.47”. The positive value explains that even if Indian labor cost increases, Korean heavy-chemical industry will still invest in Indian market. Heavy-chemical industry is relatively capital-intensive industry which cheap labor price is not really major consideration in deciding foreign investment. Therefore, both hypothesis 1.1 and 1.2 are accepted for Indian case.

Moreover, it is interesting that development of Korean economy does not positively affect Korean firms' ODI in India for both cases.

### **Korea Light and Heavy-Chemical Industries' Market Share in India**

Figure 4.2<sup>14</sup>



Year	Light market share(%)	Heavy chemical market share (%)
2001	5.70	4.80
2002	4.37	4.06
2003	3.93	7.16
2004	4.04	6.52
2005	3.21	5.69
2006	3.15	5.35
2007	2.65	5.19
2008	3.01	4.84
2009	2.35	5.43
2010	2.35	6.03

<sup>14</sup> World Trade Organization, Statistics Database

<Multi-Linear Regression: Case of India ODI and Market Share>

Table 2.7

	B	Standard Error	P > t
<b>Total ODI (Light + Heavy-Chemical)</b>	-1.2E-06	1.28E-06	0.393
<b>Korea GDP Growth Rate</b>	-0.032	0.074	0.680
<b>India GDP Growth Rate</b>	0.155	0.073	0.100
<b>India GNI per Capita</b>	-0.001	0.000	0.060
<b>Exchange rate</b>	0.141	0.093	0.204
<b>R<sup>2</sup>=0.8173</b>			

**Market Share in India(y) = 1.427 + (-1.2E-06)\*Total ODI(x1) + (-0.032)\*Korea GDP G.R(x2) + 0.155\*India GDP G.R(x3) + 0.141\*ER(x4) + (-0.001)\*India GNI per capita(x5)**

Table 2.7 explains the correlation between Korean firms' market share in India and several independent variables such as Korea GDP growth rate, China GDP growth rate, exchange rate, labor cost, and total ODI. The model is explained by 81.73%.

**Hypothesis 2) Regardless which industry, the Korean firms' ODI will increase their foreign market shares.**

According to regression result, the coefficient value of Korean firms' ODI was very minor to interpret it to have significant effect on Indian market. Although the value of ODI was negative “-1.2E-06” which eventually has inverse relationship to market share, however, since the value has insignificant meaning to explain its effect on market share. Thus, hypothesis 2 for India is rejected.

## Case Study: Japan Regression Analysis

<Index and Data sources>

Table 2.8

	Index	Data Source
<b>Dependent variable</b>	Total ODI in Japan	Bank of Korea
	Labor Cost	United States Department of Labor
<b>Independent variable</b>	Korea GDP Growth Rate	Bank of Korea
	Exchange Rate	Bank of Korea
	Japan GNI per capita	World Bank Database
	Japan GDP Growth Rate	World Bank Database

<Multi-Linear Regression: Case of Japan ODI and Labor Cost>

Table 2.9

Light Industry	B	Standard Error	P > t
<b>Labor Cost</b>	1030.24	723.85	0.213
<b>Korea GDP Growth Rate</b>	159.46	375.36	0.688
<b>Exchange Rate</b>	-14.18	7.66	0.123
<b>Japan GNI per Capita</b>	-0.70	0.65	0.332
<b>R<sup>2</sup>=0.4379</b>			
Heavy-Chemical Industry	B	Standard Error	P > t
<b>Labor Cost</b>	13269.29	10688.04	0.269
<b>Korea GDP Growth Rate</b>	689.10	5542.35	0.905
<b>Exchange Rate</b>	-177.88	113.12	0.176
<b>Japan GNI per Capita</b>	-6.33	9.66	0.541
<b>R<sup>2</sup>=0.4533</b>			

**Japan Light Industry ODI(y) = 15455.67 + 1030.24\*Labor(x1) + 159.46\*Korea GDP G.R(x2) + (-14.18)\*ER(x3) + (-0.70)\*Japan GNI per capita(x4)**

**Japan Heavy-chemical Industry ODI(y) = 113507.1 + 13269.29\*Labor(x1) + 689.10\*Korea GDP G.R(x2) + (-177.88)\*ER(x3) + (-6.33)\*Japan GNI per capita(x4)**

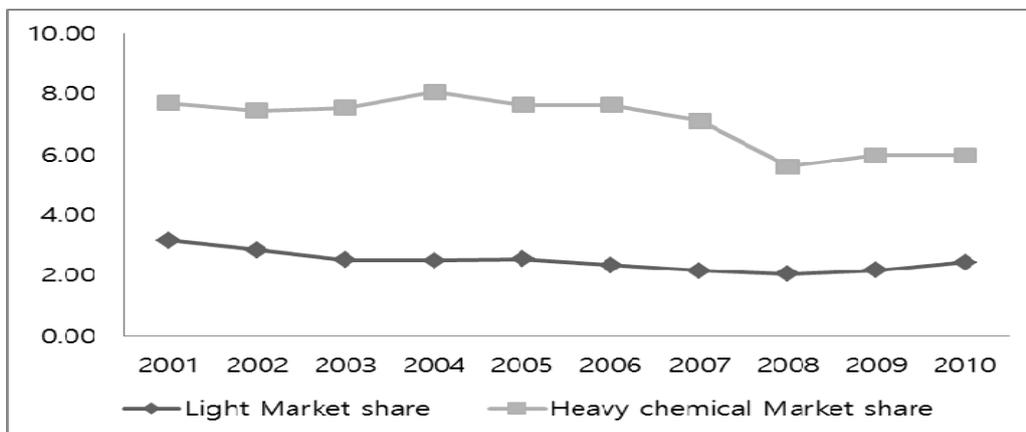
According to Table 2.9,  $R^2$  is “0.4379” for light industry and “0.4533” for heavy-chemical industry which illustrates that the model can explain at 43.79% and 45.33% respectively. Japanese light and heavy-chemical industry ODI is not well explained by those above four variables. Although second case is not a reliable model with low  $R^2$ , however, I will still use the model to explain the Indian labor cost and ODI relationship.

**Hypothesis 1.3) The purpose of Korean firms’ foreign investment in advanced economy is to expand markets, disperse risk, so, they will invest regardless of advanced economy’s labor prices.**

Japan average hourly labor compensation was US \$22.43 in 2001 and US \$31.75 in 2010 which is the second highest price among four nations. When many countries make decision on foreign investment, motivations vary from taking advantage of one country’s economic benefits to expanding markets or dispersing risks by diversifying investment. In Japanese case, one of the most advanced global economies, Korean companies try to raise their market shares, to expand brand image/product lines, and to decrease probability of risks in foreign markets. According to regression statistics, both Korean light and heavy-chemical industries have negative labor cost values which are “1030.24,” and “13269.29” respectively. In short, both Korean industries will invest in the Japanese market even if the Japanese labor cost increases. Therefore, hypothesis 1.3 for Japanese case is accepted that Korean both light and heavy-chemical industries will invest regardless Japanese labor price.

## Korea Light and Heavy-Chemical Industries' Market Share in Japan

Figure 4.3<sup>15</sup>



Year	Light market share(%)	Heavy chemical market share (%)
2001	3.16	7.68
2002	2.84	7.43
2003	2.51	7.53
2004	2.49	8.05
2005	2.54	7.62
2006	2.33	7.62
2007	2.15	7.10
2008	2.03	5.58
2009	2.15	5.96
2010	2.42	5.97

<sup>15</sup> World Trade Organization, Statistics Database

<Multi-Linear Regression: Case of China ODI and Labor Cost>

Table 2.10

	B	Standard Error	P > t
<b>Total ODI (Light + Heavy-Chemical)</b>	-1.3E-05	6.38E-06	0.112
<b>Korea GDP Growth Rate</b>	0.014	0.102	0.897
<b>Japan GDP Growth Rate</b>	0.038	0.083	0.671
<b>Japan GNI per Capita</b>	-4.6E-05	7.38E-05	0.570
<b>Exchange rate</b>	-0.001	0.000	0.205

**R<sup>2</sup>=0.7716**

**Market Share in Japan(y) = 8.281 + (-1.3E-05)\*Total ODI(x1) + 0.014\*Korea GDP G.R(x2) + 0.038\*Japan GDP G.R(x3) + (-0.001)\*ER(x4) + (-4.6E-05)\*Japan GNI per capita(x5)**

Table 2.10 shows correlation between Korea's total foreign investment industry in Japan and several independent variables such as Korea GDP growth rate, Japan GDP growth rate, exchange rate, labor cost, and Japan GNI per Capita. In this model, these independent variables explain the model by 77.16%.

**Hypothesis 2) Regardless which industry, the Korean firms' ODI will increase their foreign market shares.**

Like previous Chinese and Indian cases, Japanese regression data also has shown the Korean firms' ODI has a very little impact on the market share. The value has insignificant meaning to explain its effect on market share. Thus, hypothesis 2 for Japan is rejected.

## Case Study: US Regression Analysis

<Index and Data sources>

Table 2.11

	Index	Data Source
<b>Dependent variable</b>	Total ODI in US	Bank of Korea
	Labor Cost	United States Department of Labor
<b>Independent variable</b>	Korea GDP Growth Rate	Bank of Korea
	Exchange Rate	Bank of Korea
	US GNI per capita	World Bank Database
	US GDP Growth Rate	World Bank Database

<Multi-Linear Regression: Case of US ODI and Labor Cost>

Table 2.12

Light Industry	B	Standard Error	P > t
Labor Cost	-39726.75	51855.78	0.478
Korea GDP Growth Rate	-1198.78	21799.84	0.958
Exchange Rate	426.93	716.05	0.576
US GNI per Capita	34.27	39.03	0.420
<b>R<sup>2</sup>=0.2697</b>			
Heavy-Chemical Industry	B	Standard Error	P > t
Labor Cost	-163388.77	123340.69	0.242
Korea GDP Growth Rate	-23422.35	51851.65	0.670
Exchange Rate	2468.22	1703.17	0.206
US GNI per Capita	122.19	92.89	0.245
<b>R<sup>2</sup>=0.4891</b>			

US Light Industry ODI(y) = -731503 + (-39726.75)\*Labor(x1) + (-1198.78)\*Korea GDP G.R(x2) + 426.93\*ER(x3) + 34.27\*US GNI per capita(x4)

$$\text{US Heavy-chemical Industry ODI}(y) = -2690959 + (-163388.77)*\text{Labor}(x1) + (-23422.35)*\text{Korea GDP G.R}(x2) + 2468.22*\text{ER}(x3) + 122.19*\text{US GNI per capita}(x4)$$

According to Table 2.12, R<sup>2</sup> is “0.2697” for light industry and “0.4891” for heavy-chemical industry which illustrates that the model can explain by 26.97% and 48.91% respectively. US light and heavy-chemical industry ODI are not well explained by those above four variables. Although these models are not reliable sources with low R<sup>2</sup>, however, I will still use the models to explain the US labor cost and ODI relationship for both light and heavy-chemical cases.

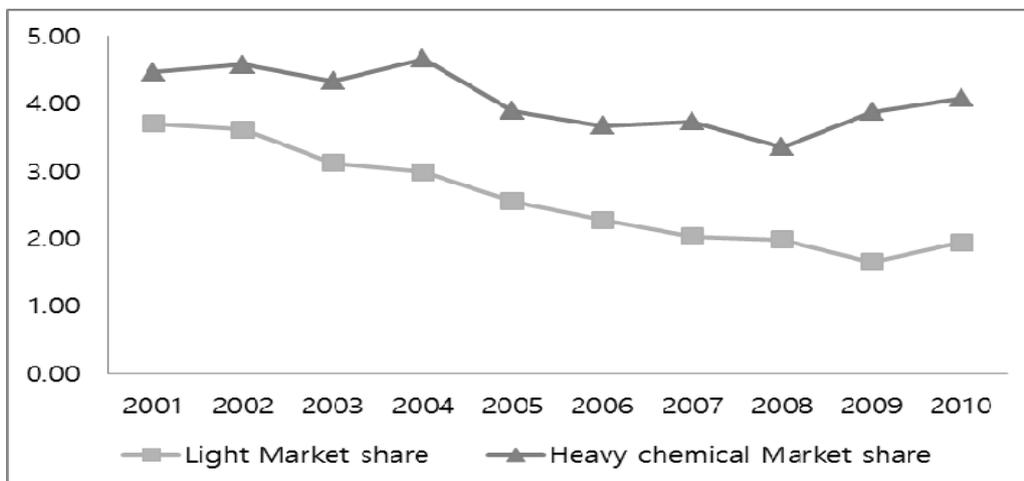
**Hypothesis 1.3) The purpose of Korean firms’ foreign investment in advanced economy is to expand markets, disperse risk, so, they will invest regardless of advanced economy’s labor prices.**

US average hourly labor compensation was US \$26.22 in 2001 and US \$34.81 in 2010 which is the highest price among four nations. FDI motivation might differ in developed economies from that in developing economies. For example, Korea’s FDI in the US would further help Korea to more deeply understand the US customers’ demand, thus, further expand its markets shares in the US. Like Japanese case, Korean companies try to raise their market shares, to expand brand image/product lines, and to decrease probability of risks in US market. According to US regression statistics, both Korean light and heavy-chemical industries have negative labor cost values which are “-39726.75,” and “-163388.77” respectively and different from Japanese case. In short, both Korean industries will not invest in the US market if the US labor compensation increases. Then, it comes to the issue of why both Korean industries would invest in Japan while they do not invest in the US as foreign labor prices increase? Further explanations will be elaborated in section 7.

## Korea Light and Heavy-Chemical Industries' Market Share in US

Figure 4.4<sup>16</sup>

(unit:%)



Year	Light market share(%)	Heavy chemical market share (%)
2001	3.70	4.46
2002	3.61	4.57
2003	3.11	4.33
2004	2.98	4.66
2005	2.55	3.89
2006	2.27	3.66
2007	2.03	3.73
2008	1.98	3.35
2009	1.65	3.87
2010	1.94	4.08

<sup>16</sup> World Trade Organization, Statistics Database

<Multi-Linear Regression: Case of US ODI and Market Share>

Table 2.13

	B	Standard Error	P > t
<b>Total ODI (Light + Heavy-Chemical)</b>	7.22E-08	1.92E-07	0.725
<b>Korea GDP Growth Rate</b>	0.018	0.029	0.566
<b>US GDP Growth Rate</b>	0.096	0.038	0.067
<b>US GNI per Capita</b>	-8.3E-05	1.5E-05	0.005
<b>Exchange rate</b>	0.0009	0.000	0.204

**R<sup>2</sup>=0.9746**

$$\text{Market Share in US}(y) = 5.699 + 7.22\text{E-}08*\text{Total ODI}(x1) + 0.018*\text{Korea GDP G.R}(x2) + 0.096*\text{US GDP G.R}(x3) + 0.0009*\text{ER}(x4) + (-8.3\text{E-}05)*\text{US GNI per capita}(x5)$$

Like in the previous three cases, US regression data also has shown the Korean firms' ODI has a very little impact on the market share. The value has insignificant meaning to explain its effect on market share. Thus, hypothesis 2 for US is rejected.

**Hypothesis 2) Regardless which industry, the Korean firms' ODI will increase their foreign market shares.**

US average hourly labor compensation was US \$30.59 from 2001 to 2010 which is the second highest price among four nations. When many countries make decision on foreign investment, motivations vary from taking advantage of one country's economic benefits to expanding markets or dispersing risks by diversifying investment. In Japanese case, one of the most advanced global economies, Korean companies try to raise their market shares, to expand brand image/product lines, and to decrease probability of risks in foreign markets. According to US regression statistics,

both Korean light and heavy-chemical industries have negative labor cost values which are “-39726.75,” and “-163388.77” respectively and different from Japanese case. In short, both Korean industries will invest in the US market even if the Japanese labor cost increases.

## 7. Comparison and Implications

### Market Shares in Emerging Economy

	Independent Variables' Coefficients			
	China		India	
<b>Korea GDP Growth Rate</b>	0.2632647	-0.1895651	0.0343976	-0.1032311
<b>China/India GDP Growth Rate</b>	2.184359	-0.4954615	0.526633	0.3349837
<b>Exchange Rate</b>	0.0819357	-0.1226074	0.2392075	0.1088438
<b>Light/Heavy-chemical Industry ODI</b>	0.00000571	-0.00000254	-0.0000185	-0.00000253

### Market Shares in Advanced Economy

	Independent Variables' Coefficients			
	Japan		US	
<b>Korea GDP Growth Rate</b>	0.0377217	-0.0836965	0.0512493	0.0226494
<b>Japan/US GDP Growth Rate</b>	0.0211292	0.1061475	0.0653728	0.1189421
<b>Exchange Rate</b>	0.0014343	-0.0012988	0.0019688	0.0027334
<b>Light/Heavy-chemical Industry ODI</b>	0.0000569	-0.0000152	0.000000429	-0.000000137

#### <Case Comparison: Outward Direct Investment and Labor Cost>

In this section, I tried to compare Korean firms' investment behaviors in four foreign markets according to foreign labor prices. I believed that Korea's investment motivations differ. For example, ODI motivations in advanced countries such as Japan and the US are 1) disperse risks 2) raise production efficiency 3) adaptation of advanced technology. On the other hand, ODI motivations in emerging countries such as India and China are 1) new market frontier 2) secure raw material.

Since the purpose of Korea's investment in advanced economies is not to take advantage of their raw materials or labors, thus, I hypothesized that Korea will not be affected by Japanese and US labor costs in making decision of ODI. Unlike the

advanced case, the purpose of Korea's investment in emerging economies is to take advantage of their raw materials and cheap labors, thus, I hypothesized that Korea's light industry which is labor-intensive will be affected by labor prices. However, I hypothesized that Korea's heavy-chemical industry which is capital-intensive will not be as much affected by labor prices.

It was determined that Korea's light industry investment in emerging economies was affected by emerging economies' labor prices. Furthermore, Korea's heavy-chemical industry investment in emerging economies was not affected by emerging economies' labor prices. Thus, both hypotheses 1.1 and 1.2 which are emerging economies cases were accepted. While emerging economies models show clear pattern in light and heavy-chemical industry, in advanced economies, models are more complicated that hypothesis 1.3 were rejected in some cases.

Korea's both light and heavy-chemical industries' investments in Japan were not affected by Japanese high labor costs while Korea's both light and heavy-chemical industries' investments in the US were affected by the US high labor costs. Although few cases are found to be not statistically significant, but I will still use the models with limits. Then, it comes to an issue that why would Korean firms not invest in the US as labor price raises but why do so in Japan? Although Korean firms may be disadvantaged from Japanese expensive labor prices, the firms can still make profits; geographic distance, similar cultures, and East Asia's Trade Agreement (Mezias, 2007).

While these factors support ODI motivations to Korean firms in Japan, the US case is different. Because US-Korea has geographic barrier and cultural distance, Korean firms would not bear these hardships along with the US high labor price, thus, will not invest in the US as labor prices increase.

### **<Case Comparison: Outward Direct Investment and Exchange Rate>**

In this section, I tried to compare Korean firms' investment behaviors in four foreign markets according to foreign currency movements. Increase of exchange rate refers to devaluation of foreign currency and vice versa.

It was determined that in emerging economies, appreciation of Chinese Yuan and Indian Rupee over Korean Won will decrease its investment in China and India. Moreover, in advanced economies, appreciation of Japanese Yen will also decrease foreign investment, however, Korean firms will still invest in the US as Korean Won depreciates over US Dollar. In short, if Chinese, Indian, and Japanese currencies become expensive relative to Korean Won, Korea will not invest in their markets but only in the US regardless of US dollar appreciation. Thus, Korea's willingness to invest in the US market in spite of dollar appreciation refers that Korea's number one targeted market is the US.

Moreover, because the US is Korean firms' main targeted market, they adopt financial derivatives such as SWAP to prevent loss from foreign exchange.

### **<Case Comparison: Market Share and Outward Direct Investment>**

As results of four regression analysis, all China, India, Japan, and the US cases showed that any Korean firm's foreign investment has insignificant effect on foreign market shares. Hence, ODI is limited to only one marketing tool use by firms that they use in global business strategy. So, ODI is one indirect tool but not direct one that significantly increases the market shares. Then, I tried to find the sources that considerably contribute to increase foreign market shares through the literature reviews. Each country's trade policy, economic policy, public policy, exchange rate, interest rate, consumption pattern, and consumer taste, economic growth rate are the important factors that have a great influence on increase in Korean firms' global market shares. Thus, in order to survive in world markets, Korean manufacturers must produce good-

quality products with low price, and develop competitive marketing strategies. Moreover, it must use strategic currency strategies to reduce risks from currency wars among nations. The last, through four economies regression analysis, it was determined that each country's GDP growth has positive impact on increase in market shares.

## 8. Conclusion

These days the global has become one huge integrated society in terms of culture and economy. Global economic integration is not a new phenomenon. Global economic integration—through trade, factor movements, and communication of economic knowledge and technology—has been on a generally rising trend worldwide. This process of globalization in the economic domain has not always proceeded smoothly. Nor has it always benefited all whom it has affected. Indeed, during the past half century, the pace of economic globalization has been particularly rapid. And, with the exception of human migration, global economic integration today is greater than it ever has been and is likely to deepen in the future.

This paper seeks to the Republic of Korea's trade pattern and outward direct investment (ODI) patterns from 2001 to 2010 in emerging and advanced economy although regression of a few models have statistical limits due to limited numbers of sample data. Outward Direct Investment is considered to be alternative means available to the firms to give them particular opportunities for acquiring international resources and capitals. As a result of these economic integrations, many countries have started to invest in foreign nations in order to seek for their own interest and benefits. Korea is one example of that seeks for its own interest and benefits in international markets where natural resources, human capitals, dynamic markets are abundant. Korea has been showing increasing trend of ODI pattern in both emerging and advanced economy. Generally when we think of foreign investment, we assume countries are interested in various foreign capitals such as cheap labor costs, natural resources or capitals. However, this only limits the concept of foreign investment in one dimension of advantage that we can take from relatively poor economies where relative labor price cheaper than that of in Korea. But Korean firms do not only invest in emerging economy but also in advanced economy. By investing in advanced economy, although Korean companies can no longer take advantage of human resources, they can study

foreign markets, seek foreign demands, save transportation costs, and increase its market shares.

In this paper, I analyzed the relationship between Korea's foreign investment and labor costs. And then, I tried to find how Korea's foreign share is affected by Korea's foreign investment. Since the purpose of Korea's investment in advanced economies is not taking advantage of their raw materials or labors, thus, I hypothesized that Korea will not be affected by Japanese and US labor costs in making decision of ODI. Unlike the advanced case, the purpose of Korea's investment in emerging economies is to take advantage of their raw materials and cheap labors, thus, I hypothesized that Korea's light industry which is labor-intensive will be affected by labor prices while that Korea's heavy-chemical industry which is capital-intensive will not be as much affected by labor prices.

Generally, it showed trend that Korea's light industry investment in emerging economies was affected by emerging economies' labor prices and Korea's heavy-chemical industry investment in emerging economies was not affected by emerging economies' labor prices with few exceptions.

It was determined that Korea's light industry investment in emerging economies was affected by emerging economies' labor prices. Furthermore, Korea's heavy-chemical industry investment in emerging economies was not affected by emerging economies' labor prices. Korea's both light and heavy-chemical industries' investments in Japan were not affected by Japanese high labor costs while Korea's both light and heavy-chemical industries' investments in the US were affected by the US high labor costs. I tried to figure out why would Korean firms not invest in the US as labor price raises but why in Japan? Although Korean firms may be disadvantaged from Japanese expensive labor prices, the firms can still make profits; geographic distance, similar cultures, and East Asia's Trade Agreement. While these factors

support ODI motivations to Korean firms in Japan, the US case is different. Because US-Korea has geographic barrier and cultural distance, Korean firms would not bear these hardships along with the US high labor price, thus, will not invest in the US as labor prices increase.

In addition, Korean firms' market shares in both emerging and advanced economies have shown similar pattern. All China, India, Japan, and the US cases showed that any Korean firm's foreign investment has insignificant effect on foreign market shares. Hence, ODI is one marketing tool for firms used in global business strategy. Then, what are substantial contributors in increasing foreign market shares? Trade policy, economic policy, public policy, exchange rate, interest rate, consumption pattern, and consumer taste, economic growth rate are the important factors that have significant influence on increase in Korean firms' global market shares. Four economies' GDP growth rate is positive contributor in increase of foreign market share. In order to survive in the world markets, Korean manufacturers must produce good-quality products with low price, and competitive marketing strategies. Moreover, we must use strategic currency strategies to reduce risks from currency wars among nations. However, as I mentioned above because of Indian economy is not yet developed and Chinese economy is still not fully open, data sources are limited so, generally models have statistical error which suggest further research topic to future scholars.

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## 국 문 초 록

21세기 세계화의 영향으로 문화, 사회뿐 아닌 각 국가의 경제 발전에도 서로 적잖은 영향을 끼쳐왔다. 글로벌 경제통합의 결과물인 세계무역기구의 설립을 시작으로 한국을 비롯한 여러 나라들이 무역을 통하여 제품과 서비스뿐 아니라 서로의 필요에 의한 노동력, 자본, 자원 등까지 공유하기 시작하였다. 이 논문의 목적은 이러한 경제의 글로벌화로 인한 한국 해외직접투자가 중국, 인도, 일본, 그리고 미국에서 한국제품의 해외시장점유율에 어떠한 영향을 끼쳤는가를 조사해보기 위함이다. 해외직접투자란 한국의 기업이 해외에 직접 공장을 짓거나 회사를 운용하는데 참여하는 것을 뜻한다. 단순히 해외에서 자산을 운용하는 것에 그치지 않고 경영참가와 기술제휴에 목적이 있다. 본 논문에서 저자는 첫째, 현지의 노동 가격이 한국기업의 해외직접투자에 어떠한 영향을 끼치는 지 알아보았다. 한국기업의 해외직접투자는 신흥국 뿐 아니라 선진국에서도 이루어지고 있다. 신흥국과 선진국에서의 해외직접투자 동기는 그 나라의 값싼 노동력, 해외시장개척, 해외고객의 요구 등 다양하게 존재한다. 다변량회귀분석 결과, 현지의 값싼 노동력이 한국기업의 해외직접투자를 결정하는 큰 요소인 것으로 나타났다.

본 논문에서 한국기업을 노동집약적 산업인 경공업과 자본집약적 산업인 중화학공업으로 나눈 후, 각 산업별로 그리고 각 나라별로 현지 노동가격이 해외직접투자에 어떠한 상관관계를 갖는지 알아보기 위하여 회귀분석을 선택하였다. 첫 번째 가설은 크게 3부분으로 나누어지는데, 첫 번째 가설의 1.1은,

가설 1.1) 노동집약적인 한국경공업의 해외직접투자 동기는 주로 신흥시장의 값 싼 노동력에 기인하는 것이다.

현지의 노동가격이 비싸지면 해외직접투자는 떨어질 것 즉, 두 요소의 관계는 음의 상관관계일 것이라 예상하였다. 중국과 인도에서 한국경공업이 모두 모델에 있는 독립변수들 중 가장 큰 음의 베타값을 가짐으로써 종속변수에 가장 큰 영향을 끼치는 것으로 나타났다. 이로써 가설 1.1 은 사실임이 입증되었다.

첫 번째 가설의 1.2는,

가설 1.2) 자본집약적인 한국중화학공업 해외직접투자 동기는 신흥시장의 값 싼 현지 노동력과는 관계가 적을 것이다.

위의 노동집약적 경공업과 달리 자본집약적 중화학공업은 현지의 노동가격이 비싸지더라도 해외직접투자를 할 수 있다고 가정하였다. 그 이유는 자본집약적 산업은 노동집약적 산업보다 노동가격에 덜 민감할 것이라 예상하기에 노동가격과 해외직접투자가 양의 관계를 가질 수도 있다고 예상하였다. 마찬가지로 중국과 인도에서 한국중화학공업 모두 모델에 있는 독립변수들 중 가장 큰 양의 베타값을 가짐으로써 종속변수에 가장 큰 영향을 끼치는 것으로 나타났다. 이로써 가설 1.2도 사실임이 입증되었다.

그 다음, 가설 1.3은 산업에 관계없이 선진국에서의 한국의 투자목적은 선진기술확보, 위험분산, 생산효율성추구, 현지시장극대화 등이므로 노동가격이 비싸더라도 해외직접투자를 할 것이라 예상하였다.

가설 1.3) 미국, 일본 등 선진국에서의 한국기업이 해외직접투자 목적은

시장개척이므로 선진국의 노동가격에 상관없이 해외직접투자를 할 것이다.

일본의 경우 경공업/중화학공업 모두 노동가격과 해외직접투자 상관관계가 양의 관계인 것으로 나타났다. 일본사례의 경우 가설 1.3이 사실임이 입증되었지만 미국의 사례에서는 경공업/중화학공업 모두 음의 베타값을 가짐으로써 가설 1.3이 사실이 아님이 입증되었다.

즉, 한국기업이 미국에서는 값비싼 노동가격을 감수해가면서까지 해외직접투자를 할 이유가 없다는 것인데, 미국과 일본의 경우 같은 선진시장인데 왜 다른 결과가 나왔는지 문헌조사를 해보았다. 그 결과 일본의 경우 한국과 일본사이의 가까운 지리적 여건, 문화적 요인, 그리고 동아시아 3개국의 무역협정 등으로 한국기업이 일본의 비싼 노동가격을 감수하면서 해외투자를 해야 할 목적제시를 하고 있으나, 미국에서는 지리적으로 먼 거리로 인해 발생하는 운송비용, 다른 문화적 배경으로 인해 그 나라의 소비시장을 이해하는데 걸리는 시간 등 여러 장벽들로 인하여 비싼 노동가격을 감수하면서까지 해외직접투자를 하지 않는 것으로 나타났다.

첫 번째 회귀분석을 통하여 한국의 각 산업별, 각 나라별 해외직접투자의 동기가 다르다는 것을 알 수 있었고, 이외에도 환율과 해외직접투자관계를 분석해본 결과 중국, 일본, 인도에서는 환율이 비싸짐에 따라 해외투자가 감소하는 것으로 나왔고, 미국의 사례만 환율이 비싸더라도 해외투자가 증가하는 것으로 나타났다. 이에 문헌조사를 통하여 미화달러에 관해서는 한국기업들이 SWAP등 금융상품으로 다른 나라에 비해 환율에 영향을 받지 않도록 환율조절에 미리 대비를 한 것으로 나타났다.

가설 2) 한국경공업과 중화학공업의 해외직접투자는 해외시장점유율을 높일 것이다.

회귀분석 결과, 중국, 일본, 인도, 미국 네 나라 사례 모두 공통적으로 해외직접투자가 해외시장점유율에 끼치는 영향이 미미하다는 것을 나타냈다. 결국 해외직접투자는 해외시장점유율을 높이기 위한 도구 중 하나일 뿐이고, 해외시장점유율을 높이는 결정적이고 직접적인 요소는 아니라고 결론 내렸다. 그렇다면 해외시장점유율을 높일 수 있는 요소는 무엇이 있는가? 문헌조사를 통하여 각 나라의 무역 정책, 경제 정책, 환율, 금리, 소비형태, 소비자들의 심리, 나라의 경제성장률 등이 한국기업의 해외시장점유율을 높이는데 더 직접적인 영향력을 끼친다는 것을 알 수 있었다. 그렇기 때문에 한국기업은 세계시장에서 경쟁사보다 낮은 가격에 품질이 좋은 제품, 마케팅전략을 세워야 하며 환율전략으로 국제시장에서의 피해를 최소화 해야 할 것이다. 이외에도 회귀분석을 통하여 각 나라의 경제성장률이 각 나라에서의 시장점유율을 높이는 데에 긍정적인 영향을 끼치는 것으로 나타났다. 또한 해당 국가의 투자 여건, 법과 제도적 규제 상황 등도 매우 중요한 사항으로 고려된다. 반면 해외직접투자를 받아들이는 국가는 이러한 직접투자를 이용해 고정자산을 형성할 수 있을 뿐만 아니라 고용창출을 통해 경제성장을 이룰 수 있는 기회이기 때문에 중국이나 베트남과 같은 개발도상국들은 자국의 경제성장을 위해서는 해외투자를 유치하기 위한 적극적인 정책 노력을 펼쳐야 한다.