

Impact of Market, Institution and Technology on the Location of FDI: The Case Study of Korean *Samsung* CDMA FDI in China

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Abstract : The main aim of this article is to identify the fundamental reason for changes in the geography of Korean foreign direct investment (FDI) in China. More specifically, the article argues that changes in the industrial sectors and the location of FDI resulted from the transition of strategies for Korean FDI in China since the late 1990s is not based on ownership specific advantages, internalization advantages and locational advantages (OIL), but on changes in site where both the needs of Korea and China are articulated, i.e. the strategy for business integration, centering on market, institution and technology. In other words, changes in the location of Korean FDI in China have been the result of changes in the Chinese market structure, institutional changes in Chinese inward FDI incentives and regulations and the accumulation of Korean technology capability since 2000. In addition, by investigating production networks in China, this article attempts to identify the relationships between changes in Korean FDI location and changes in market, institution and technology. Therefore, the empirical evidence provided by the case study of CDMA (code division multiple access) mobile communications FDI since 2000 in China is used to identify the impact of market, institution and technology on the location of Korean FDI in China.

Key Words: foreign direct investment, strategies for business integration, defensive and offensive strategies, China, CDMA mobile communications

요약 : 본 논문의 주 목적은 한국의 대중국 해외직접투자의 지리적 변화에 대한 근본적인 원인을 밝히고자 하는데 있다. 특히 1990년대 후반 이후 대중국 투자전략 전환으로 인한 투자 업종 및 입지의 변화는 한국 투자기업이 기업특유 우위 (ownership-specific advantages), 내부화우위 (internalization advantages) 및 입지우위 (locational advantages)에 이론적 기반을 둔 것이 아니라, 시장, 제도 및 기술을 중심으로 한국과 중국 양 국가의 수요가 접합되는 지점의 변화, 즉 통합적 전략의 변화에 기반을 두고 있다고 주장한다. 다시 말해, 1990년대 후반 이후 한국 대중국 직접투자 입지 변화는 2000년 이후 중국시장구조의 변화, 투자유입에 대한 중국의 제도적 변화, 한국기업의 기술역량 제고에 기인한다는 것이다. 이와 더불어 본 논문은 2000년 이후 급속히 증가하고 있는 CDMA 이동통신 투자경험을 사례로 한국 대중국 직접투자에 대한 시장, 제도 및 기술의 입지효과를 밝히고자 하였다.

주요어 : 해외직접투자, 사업통합전략, 방어적 및 공격적 전략, 중국, CDMA 이동통신

1. Introduction

Since the late 1990s the strategy of Korean FDI in China has gone through significant changes. Korean

FDI in China had been mainly focused on *profit-defensive strategy* up to the middle of 1990s in the basis of export-led FDI by focusing on building labor-intensive production platforms based on cost

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competitiveness. Despite the fact that the Chinese government has restricted the access of FDI firms to the local market through various institutional regulations in the name of protecting local industries, especially in labor-intensive sectors, during the 1990s the growth of Korean FDI in labor intensive sectors has been led by a dual strategy for Chinese inward investment: defensive and offensive restructuring¹⁾. The defensive strategy, as one of two main axes for regional economic restructuring through inward FDI, has resulted in export-led Korean FDI in intensive-intensive sectors, especially in the textile and clothing sector.

However, since the late 1990s the strategy of Korean FDI in China has focused on *profit-offensive strategy* based on local market-oriented FDI by increasing partnership, providing technology and connecting to high wages, which is non-cost competitiveness. The center of gravity of Korean FDI in China has been mainly coming round to electronic and communication sectors since the late 1990s. Along with these changes, there has been an important change in the location of Korean FDI in China from low to high wage regions. As Korean FDI in the capital and technology intensive sectors has been assembling-based production operation, its location was mainly low cost regions. Therefore, two main aims could arise in this article. The first is to investigate the main reasons for changes in the industrial sector and business strategies of Korean FDI in China. The second aim is to identify the fundamental reason for changes in the geography of Korean FDI in accordance with its sectoral and strategic changes in China.

To this end, the article is considered in relation to three factors - market, institution and technology. This is because changes in the industrial sectors and business strategies of Korean FDI in China are significantly associated with changes in the local market structure, government policies in the perspective of institutional regulations and incentives, and Korean technology capability development. Also,

the fundamental reasons for changes in Korean FDI location could be identified through investigating the business activities of Korean firms in accordance with their business strategic changes. Therefore, the empirical evidence provided by the case study of Samsung CDMA mobile communications FDI in China is used to identify the impact of market, institution and technology on the location of Korean FDI in China. However, it is hard to generalize the geography of FDI through simple case studies as the patterns and characteristics of FDI are directly associated with various business strategies involved in both internal and external economic environments as well as industrial characteristics. Nevertheless, the case study investigated in this research would provide an insight into fundamental reasons for changes in FDI location.

The article is divided into three sections. The first section considers an alternative approach to the location of FDI by reviewing and criticizing existing approaches. It argues that it is the process implicated in the networks of organizational and institutional actors, in relation to market, institution and technology. The second section presents the trends of Korean FDI in China. Also, it is concerned with (1) changes in the local market structure, (2) Chinese government policies, and (3) the accumulation of Korean CDMA technology capability, all of which have a critical part to play in the sectoral and strategic changes of Korean FDI in China. The final section examines the reasons for changes in the recent location of Korean CDMA FDI firms through case studies of Shanghai Bell Samsung Mobile Communications (SBSMC) and Shenzhen Samsung Kejian Mobile Communication Technology (SSKMT) in China, and suggests an alternative approach to Korean FDI location.

2. Location of foreign direct investment: Theoretical perspective

This section attempts to review and criticize exist-

ing approaches to the location of FDI, and to suggest an alternative approach on the basis of strategies for business integration of home and host economies, especially on the impact of market, institution and technology for the location of FDI.

There are a number of researches on the locational decision-making of FDI since multinational corporations have emerged. The study on the location of FDI, in particular, has been examined mainly by transaction cost economists, focusing on the 'market' based on non-transaction specific investment and 'hierarchy' where highly specific investments in mass production are necessary to facilitate transaction as the structure of governance in coordinating the forms and processes of economic actors and institutions (Williamson, 1985; 1986). This approach provides an insight into why firm-specific advantage should be applied through the operation of FDI. For example, in the case of the firm-specific advantage of multinational enterprises (MNEs) in technology, monopolistic advantage can be achieved through the way in which MNEs internalize their external market within their firm, in order to avoid the flow of technology out of the firm (Buckley 1988: 181-193). Therefore, firm-specific advantage in operating FDI could be explained through the internalization of the external market, i.e. the *theory of internalization*.

The theory of internalization started with the work of Coase (1937) on transaction cost analysis associated with explaining the existence of the firm in a domestic context. Coase (1937) argued that the notion of market use cost should be introduced, to understand the nature of the firm, as market imperfection involves market transaction cost. Apart from the cost of production, firms should charge either the cost of internal organization or market use, in order to cover these costs. In other words, the economic activities of firms in a capitalist economy could be coordinated in one of two ways: either by the price mechanism in the market or by planned and authority relations within the firm (see also

Yeung, 1998, 53-57). For example, long-term contracts in inter-firm relations lead to arm's length transactions, but in reality there are uncertainties in contract involved in the cost of market transactions. Therefore, firms prefer the internalization of their organization, to economize on market transaction cost.

Williamson (1985; 1986; 1989), in particular, developed this theory more programmatically, to explain the alternative governance structures involved in coordinating economic activities and economizing on transaction costs. He suggested three broad ways of governing the structure of market transactions: 'bounded rationality', 'opportunistic behavior' and 'asset specificity'. First of all, market transaction cost is based on the bounded rationality of economic actors (Williamson, 1985, 45). For example, if human beings or economic actors possessed perfect rationality, exogenous factors such as uncertainties of contracts could be controlled easily. However, bounded rationality often involves market failure, and therefore leads to the cost of market transactions. Secondly, Williamson (1985, 47-49) argued that economic actors possess the feature of opportunism in doing business. The absence of opportunistic behavior would involve the extinction of the market use barrier, and allow long-term contracts in the inter-firm relations based on 'trust'. However, the maldistribution of information flow, information cost and the distortion of information, in reality, inevitably involve opportunistic behavior, and therefore give rise to the cost of market transaction. Finally, Williamson (1989) emphasized asset specificity to explain the mechanism of economizing upon transaction cost. He suggested three types of market transaction-specific assets: 1) non-transaction-specific asset; 2) highly specific asset for facilitating transactions, or idiosyncratic assets possessing high asset specificity; and 3) an intermediate form where semi-specific assets are involved. Should market transactions specific assets be pervasive, firms would prefer market transactions due to economizing on transac-

tion cost. However, asset specificity in specific transaction leads firms to demand security for uncertainties of contract and risk because of the possibility of the existence of opportunistic behavior. Therefore, market transaction-specific assets increase transaction costs, and lead firms to prefer internal production. Consequently, bounded rationality, opportunistic behavior and asset specificity, and their conjunction involve transaction cost, and induce the internalization of production, rather than arm's length transactions.

The theory of internalization is the expansion of transaction cost arguments in the international context (Buckley and Casson, 1976; Rugman, 1980; 1982; Buckley, 1988; 1992; Teece, 1985; Casson, 1992). On the basis of this argument, the theory of internalization regards MNEs as an internal market to overcome the costs involved in arm's length transactions in external markets, that is it regards MNEs as an alternative to the market (Rugman, 1982, 11). This theory explores how firm specific advantages could be achieved through FDI. Internalization theorists argued that the firms possessing firm-specific advantages prefer the internalization of their production through FDI, rather than external market transactions. This is because the internalization of an intermediate product market linking activities located in different countries plays a crucial role in obtaining the net benefit, and is a necessary and a sufficient condition of the FDI of MNEs (Buckley and Casson, 1976). Therefore, the location of FDI should be involved in the result of the internalization of an external market, in order to avoid transaction costs associated with market imperfections in intermediate product, knowledge, technology and finance markets².

However, there are some limitations of this theory to FDI location study. Firstly, as the internalization theory focuses on how MNEs can be the most efficient mode of executing transactions without engaging in an arm's length market by internalizing activities, and the efficient responses to market imperfec-

tion, it has paid little attention to the governance structure related to changes in capital-labor relations and state-labor relations. For example, Korean FDI has been driven not only by a desire to economize the costs related to labor and production, but also by a desire to avoid labor disputes that stemmed from the process of labor empowerment and changes in wage relations in Korea (Lee, 2001; Jung, 2000).

Secondly, 'it has paid little attention to how domestic firms internationalize their production and investment, and it offers no explanation of where firm-specific advantages are exploited' (Yeung, 1998, 55). Yeung (1998, 55) pointed out that 'there are many cases in which internationalization can be regarded as a reaction to problems involved in internalization (e.g. internal conflicts within the parent transnational corporation), and that there are also many potential advantages that can be realized by transnational production, including global scale economies, global scanning capabilities and cross-subsidization of markets'.

Thirdly, it overlooks the relationships between inward investment and the strategy for regional economic development. Internalization theory argues that FDI could be analyzed as an instrument of defensive market orientation due to the emergence of trade barriers (Rugman, 1980). I agree with this analysis of FDI, but it offers no explanation of why FDI in a certain industry is concentrated on a certain region. Therefore, although the region is a direct and practical base for inward investment, it overlooks the significance of the interaction of FDI firms and regional economies.

As a way of overcoming the limitation of internalization theory, Dunning (1981) added locational advantages of countries into firm-specific advantages and internalization advantages, to complement existing explanations of the location of FDI, giving birth to the *eclectic paradigm*. The hypothesis of this approach is that a firm will engage in foreign production if three conditions are satisfied. First of all, enterprises need to have firm-specific or ownership

specific advantages vis-à-vis their major rivals, which they utilize in establishing production in foreign countries. Secondly, firm-specific advantages of MNEs should be achieved through the way in which they extend their own business activities rather than the way in which they externalize them through contracts at arm's-length transactions with independent firms. In other words, the net benefits from the direct utilization of firm-specific advantages should be greater than the net benefits from arm's-length transactions. The final condition is that, along with the two advantages stated above, production in the host country has to have more benefits than that in the home country, that is location-specific advantage³⁾. Therefore, the satisfaction of three specific advantages - ownership, internalization and locational (OIL) advantages - enables enterprises to undertake the international relocation of production.

Dunning's eclectic theory based on OIL advantages is a very useful explanatory instrument which opens the way to empirical work for explaining locational determinants of home FDI firms and investment incentives of host countries. However, Dunning's approach can be criticized on two grounds. First of all, it overlooks changes in the accumulation strategies of FDI enterprises in the dimension of the home economy. In particular, although the governance or regulation modes of inward FDI firms should be regarded as relationships between capital and capital, capital and labor, and capital and state in the interaction between FDI enterprises and regional economies and [both formal and informal] institutional settings, Dunning (1993) confined this to the role of the state as a form of governance of economic activity gearing to the political goals of the authorities in power. Secondly, it overlooks regional accumulation strategies of the host economy regulated by institutions for inward FDI, although Dunning (1993, 48) pointed out that without knowledge about the kind of MNE activity and locational characteristics of the countries concerned,

the path of international production cannot be predicted.

Consequently, the location of FDI is not entirely determined by OIL advantages due to the dynamic nature of organizational forms and processes in accordance with different institutes, market structure and culture. Rather, the location of FDI should be closely related to dynamic relationships between home and host economies, centering on changing market environment, business strategies of both investors and local partners (whether it is export-oriented or local market-oriented FDI) and national development modes. In other words, it is the *site* where both the needs of home and host countries are articulated.

There may be three main impetuses influencing the location of FDI. One of the most relevant external effects on FDI location is a change in market structure, such as a change in the importance of a specific technology. Changes in the market structure in a certain industrial sector could play an important role as an impetus attracting the certain FDI technology. The second is government policies based on the local incentives and regulations which can foster and constrain FDI entrants (Chesbrough, 1999). Changes in local institutional environment could result in changes in the location of a certain FDI sector in a certain region. Finally, the development of technology capability of a home economy's firm could be one of the most important backgrounds for changes in the strategy of FDI firms, which is related to locational determination. Therefore, the determination of FDI location could be originated from (1) changes in the market structure, i.e. market, (2) government policies based on the local incentives and regulations, i.e. institution, and (3) the accumulation of firm technology capability, i.e. technology. The following sections present changes in the trends of Korean FDI in China, and then provide an overview of three critical factors involved in the location of Korean FDI in China.

3. Changes in the geography of Korean FDI in China

1) Changes in the trends of Korean FDI in China

After the first Korean FDI in China in 1988, it was not very active until 1991. However, since 1992 it had increased significantly due to the opening of diplomatic relations between Korea and China. In 1992, the Chinese government decided to afford full diplomatic recognition to Korea, and Korean enterprises were quick to take their opportunity through outward direct investment based on the cost reduction of production drawing upon the cheap workforce in China (Lee, 2001). At the same time, the strategies of economic development in China have been implemented through a strategy of exogenous development such as the introduction of FDI and preferential policies in the regions opened up for international investment. The successful contribution of this strategy to economic growth has led to the further opening-up of China. Therefore, the opening of diplomatic relations and exogenous

development in China had led to the significant growth in Korean FDI in China.

However, as the Korean economy faced a crisis in exchange rates, basically because of excessive foreign loans, in October 1997, alongside the crisis in the Thai economy, Korean FDI in China decreased dramatically. For example, Korean FDI in China was US\$ 348 million (457 cases) in 1999, accounting for 48.0% of volume of 1997 and 74.1% of the number of cases (see figure 1). Since 1999 the Korean economy has recovered its competitiveness, and then Korean FDI in China has gone through dramatic growth from US\$ 348 million (457 cases) in 1999 to US\$ 1.287 billion (1,592 cases) in 2003 (figure 1). Thus, the proportion of Korean FDI in China is the highest, accounting for 59.6% of total FDI in case and 37.0% in volume (elaborated from The Export-Import Bank of Korea, 2003).

What is more, there has been a significant change in the trend of Korean FDI in China. Until 1998 it was mainly focused on labor-intensive industries, particularly in the textile and clothing industry (Lee, 2001). However, as shown in table 1, its gravity has

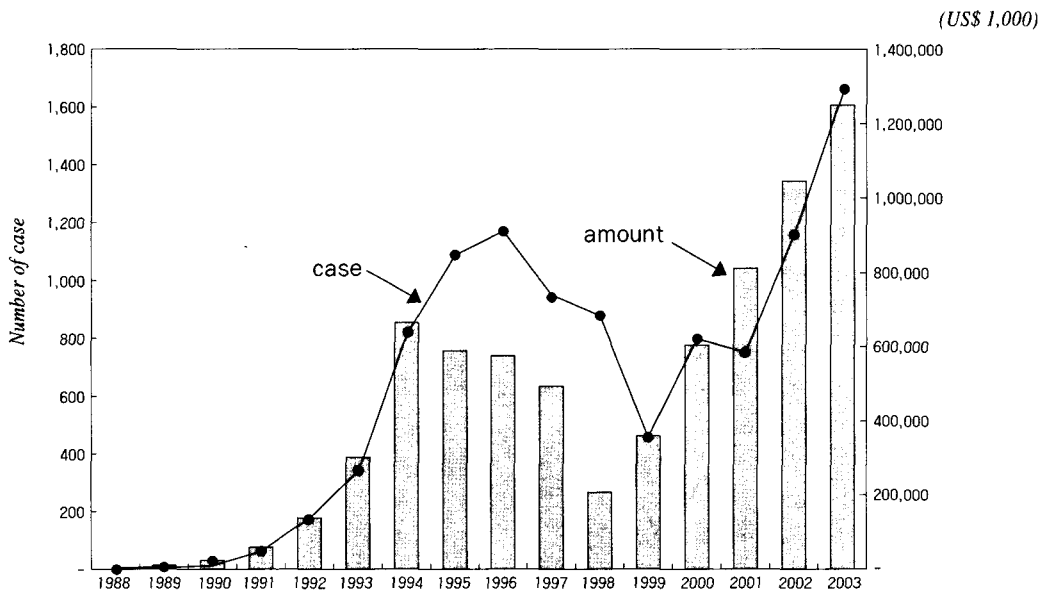


Figure 1. Trends in Korean FDI in China, 1988~2003

Source: The Export-Import Bank of Korea, 2003

Table 1. Trends in Korean FDI in China by manufacturing sector, 1999~2003

	<i>US\$ million (number of cases)</i>			
	<i>1999</i>	<i>2001</i>	<i>2003</i>	<i>Mar. 2004^a</i>
Food	8(31)	26(61)	42(92)	308(598)
Textile & clothing	14(91)	52(146)	153(207)	935(1,632)
Footwear & leather	10(33)	25(82)	27(55)	304(533)
Wood & furniture	4(11)	6(29)	7(37)	75(316)
Paper & printing	1(8)	3(19)	12(22)	91(167)
Chemicals	41(23)	55(82)	165(115)	783(697)
Non-metallic minerals	15(16)	19(20)	92(35)	509(282)
Basic metal	8(5)	15(16)	178(36)	434(184)
Fabricated metal	7(20)	19(36)	68(72)	237(398)
Machinery & outfits	17(41)	28(96)	102(176)	580(800)
Electronics & communications	102(28)	153(130)	230(265)	1,754(1,118)
Transport machinery	11(10)	11(29)	156(118)	734(366)
Others	40(91)	31(137)	63(186)	416(1,133)
Total	278(408)	442(883)	1,296(1,415)	7,167(8,224)

Source: The Export-Import Bank of Korea, 2003

Note: ^a Accumulated value and case

changed into technology-intensive sectors, particularly in electronics and communications, although Korean textile and clothing FDI in China has undergone the continuous growth since the recover from the Korean economic crisis. For example, Korean electronics and communications FDI in China has increased from US\$ 102 million (28 cases) in 1999 to US\$ 230 million (265 cases) in 2003. Also, it accounts for 24.5% of manufacturing FDI in volume and 13.5% in case in 2004 (table 1). The main reason for this is that there was significant growth in Korean mobile communication FDI by chaebols such as Samsung, SK Telecom and LG. For example, Samsung Electronics made a successful bid in the CDMA system announced in April 2001, accounting for 7.5% of the first total CDMA system bid in China, and invested in a CDMA system in Shanghai in June 2002 (www.sec.co.kr/index.jsp). The change of Korean FDI in China has led to a change in its locational pattern from low cost to high cost regions, in accordance with changes in the business strategy for Korean FDI. Therefore, following sections identify

the fundamental reasons for changes in the pattern of Korean FDI.

2) Changes in the market structure in China

One of most important main reasons for the transition of Korean FDI pattern in China from labor-intensive FDI based on export-led strategy to technology-intensive FDI based on local market-oriented strategy is a significant change in the local market⁴⁾, especially in the CDMA market since 2000. As shown in table 2, there has been the dramatic growth in the market of Chinese communications. The number of mobile communication subscriber accounted for only 8.222 million in 2000, but the number is expected to increase to 347.229 million in 2005. In particular, there has been a change in the market direction of Chinese communication service toward CDMA. The share of CDMA service market in 2001 accounted for only 1.5% in China, but the share is expected to increase to 13.9% in 2005. However, GSM (global system for mobile) subscriber has declined by 97.5% in 2002, and the share

Table 2. Mobile communication subscriber forecast in China

	Thousand (%)					
	2000	2001	2002	2003*	2004*	2005*
CDMA	0 (0.0)	2,117 (1.5)	4,930 (2.5)	17,358 (6.4)	33,415 (10.4)	48,206 (13.9)
GSM	8,222 (100.0)	135,885 (98.5)	196,568 (97.5)	252,776 (93.6)	287,807 (89.6)	299,023 (86.1)
China	8,222 (100.0)	138,002 (100.0)	201,498 (100.0)	270,134 (100.0)	321,222 (100.0)	347,229 (100.0)

Source: Ovum Forecast, 2001

Note: Numbers of subscriber since 2002 are expected.

is expected to decrease to 86.1% in 2005. It has provided a good opportunity for creating local market for Korean firms which possess world leading CDMA technology and also has given rise to the rapid increase of Korean CDMA FDI in China. Therefore, this section attempts to reveal one of reasons for the change in the pattern of Korean FDI by investigating the reason why China has begun to change market direction or to introduce CDMA.

There are three main factors leading to changes in the mobile communication market structure in China. The first one is the increase in the importance of CDMA technology. As the spread of the CDMA market in the world is the early stage, the Chinese government seeks to take technology advantages and initiatives by acquiring CDMA technology from world leading FDI firms.

The second is originated in the experience of Chinese inward GSM FDI. As shown in table 2, the mobile communication market has been dominated by GSM since it has commenced in China. Nonetheless, there are rare opportunities to take technology initiatives in the GSM market, as the property rights of its core technology are already occupied by leading European countries and the USA. Also, the market share of local GSM handset and system equipment was only less than 3% respectively in 2000, whereas the handset market has been dominated by transnational enterprises (TNEs) such as Motorola (34%), Nokia (29%) and

Ericsson (13%) (elaborated from www.c114.net). In addition, the capability of R&D in GSM system equipment and technology capability of core components such as chip and battery in handset are far behind foreign investors. It should be resulted from that China opened the local market as FDI compensation with little concerns with the effects of technology spillover. Therefore, the change in direction to CDMA is to offset return from the GSM market.

The final one is the government strategy for prohibiting the monopolistic power of a specific public firm, which is called China Telecom involved mainly in GSM. China Telecom, the largest public communication firm, has established the GSM network since 1994, so that it has dominated the Chinese mobile market. However, the result of its business operation become inefficient. Therefore, the Ministry of Information and Industry divided *China Telecom* into 4 independent firms - *China Fixed-Line Telephone Company*, *China Mobile Communications Company*, *China Paging Company* and *China Satellite Company* - in order to reduce monopolistic strength of *China Telecom* (Kong, 2000). At the same time, the Chinese government has supported *China Unicom*, the second largest mobile phone operator based on CDMA, as a competitor of *China Mobile Communications Company*⁵⁾. Indeed, until the late 1990s it focused on GSM service. However, after the government merged it with *Guozin* (radio paging business part of *China Telecom*) and *Great Wall Network* (only CDMA

service provider in China), it is the only company in China which is able to have authorization to construct and operate the CDMA network (Kong, 2000). As a result, the government strategy for prohibiting monopolistic power of China Telecom by intensifying competitiveness of China Unicom through providing authorization of CDMA has led to the growth in the market share of CDMA in China.

Consequently, changes in the market structure resulted from the increase in the importance of CDMA technology, the experience of inward GSM FDI and the government strategy for prohibiting monopolistic power of China Telecom has resulted in the rapid increase in CDMA FDI, especially Korean leading firms in CDMA system and handset, so that the pattern of Korean FDI in China has focused on CDMA mobile communications.

3) Changes in institutional incentives and regulations in China

Other important factor leading to the change in the pattern of Korean FDI in China is institutional regulations from the Chinese government aimed at building up its own technology capability. Especially, they are closely related to inward FDI incentives and local market regulations.

The government has attempted to attract FDI firms by providing inward FDI incentives for both foreign investors and local agents. In accordance with 'tax provisions for foreign investment firms', foreign firms which support research institutes and universities with finance for technology development are deducted from income tax. Also, business tax is remitted in the case of income implicated in technology transfer, technology development business, and technology consulting and service business (www.moftec.gov.cn). In addition, local governments have provided FDI inducement incentives for local officers and even individuals who is directly involved in the inducement of FDI, especially high-tech industries (Lee, Lee and Ryu, 2003).

However, inward FDI incentives are not applica-

ble to all industrial sectors. They are only applicable to industrial sectors designated by the government. According to 'Catalogue of Encouraged Hi-tech Products for Foreign Investment' established by Ministry of Science and Technology and the Ministry of Commerce, which has been effected from April 2002, FDI sectors designated by the government in the communication industry include innovative and initiative technology sectors such as CDMA system manufacturing, optical fiber manufacturing, optical electronics components, communication system network technology etc (www.kotra.or.kr/unicenter/focusb). However, sectors banned by the government include sectors which the market is already dominated by foreign investors or local industries could compete with foreign investors such as analog and GSM mobile communication systems, spinning and weaving, etc (Lee, Lee and Ryu, 2003). It is to stimulate the introduction of advanced technology FDI firms. It is crucial in the CDMA mobile communications FDI by regulating GSM FDI and spinning and weaving FDI.

What is more as only 19 local firms designated as CDMA mobile communication production firm could participate in a public tender in China, CDMA FDI firms should have joint partnership with local firms to enter the local market. In particular, CDMA FDI firms are not allowed to possess over 49% of ownership. Also, production quotas are allocated to CDMA joint venture. In fact, it runs counter to the agreement of WTO. However, in accordance with government announcement, 'the planned economy will be continuous in the mobile handset market, although the market economy will be implemented in all sectors' (ETRI, 2000). For example, the government constraints the market of CDMA joint venture firms through the way in which CDMA mobile handset products produced should be purchased by 14 local firms designated as selling agencies. In particular, the end market of CDMA handset is controlled by China Unicom. In other words, it is a kind of institutional setting by the government for foster-

ing technology transfer and protecting the local market from CDMA FDI firms. Consequently, institutional regulations used by the government for acquiring high technology from foreign firms as well as exerting control over the local market has led to the transition of Korean FDI strategy to local market-oriented FDI in technology intensive sectors, which is the profit offensive strategy.

4) Development of Korean technology capability

The final factor enabling Korean firms to change their FDI pattern should be discussed in the perspective of the development of technology capability in Korea. As Chinese strategies for inward FDI are mainly focused on technology acquisition and the protection of the local market from advanced foreign firms, high technology capability should be critical to cope with Chinese inward FDI strategies.

Indeed, the demand for CDMA technology in China has provided an important market opportunity for Korean CDMA firms, as Korea is the first country in which succeeded in the commercialization of CDMA. The world transition of analogue mobile system into the digital system was mainly dominated by GSM, which is a European digital standard, when the Korean government considered the development of mobile system. However, the difficulty of acquisition of GSM core technology, the possibility of catching-up CDMA core technology in a short period, low entry barrier and the effectiveness of radio frequency spectrum has led MIC to select the CDMA technology (The Electronic Times, 2002; West, 2001). Also, its technology initiative advantages in the commercialization of CDMA system played a critical role in selecting it as the national standard in August 1991, despite serious technological and market uncertainty (Choung and Hwang, 2002). It resulted in a joint research consortium for the CDMA system development, centering on MIC (Ministry of Information and Communications), ETRI (Electronic and Telecommunication

Research Institute), Qualcomm, service provider (*SK Telecom and Shinsegi Telecom*), designated manufacturers (*Samsung, LG, Hyundai and Maxon*). Thus, the successful commercialization of CDMA in the internationally competitive mobile telecommunication market is the result of the partnership. It provides Korean firms with a foundation which could take market initiative advantages through the spillover of initial technology. At the same time, it provides foreign market initiative advantages for them, corresponding with Chinese inward CDMA FDI strategies. As a result, Korean CDMA FDI in China can be seen as the result of a contingent combination of technology demand and supply.

4. Changes in locational determinants: The case of Samsung CDMA FDI in China

This article has argued that the change in the geography of Korean FDI is originated in (1) changes in the local market structure, (2) institutional regulations, and (3) the development of technology capability. Therefore, the empirical evidence provided by the case study of *Samsung CDMA* mobile communication FDI since 2000 in China is used to identify the impact of market, institution and technology on the location of Korean FDI in China⁶.

The traditional *Samsung* FDI in China has been export-oriented to sustain existing foreign markets by using cheap workforce in labor-intensive assembling sectors such as micro-oven, monitor, washing machine, etc (Lee 2001). However, since 2000 the pattern and characteristics of *Samsung* FDI, especially in the CDMA mobile communications sector, has transformed into local market-oriented by locating its production platforms in the highest wage regions in China. The regions of case study are located in Shanghai and the Shenzhen Special Economic Zone (SEZ) where labor costs and land price are the highest in China. The main reasons for the location of

Samsung FDI firms in these regions could be found in the strategic integration between *Samsung* and local partners. There are two fundamental reasons for strategic business integration. The first one is to create the local market through institutional embeddedness. Interviews with personnel at SBSMC and SSKMT revealed that their location is determined as follows:

“In terms of locational determinants in Shanghai, it is important to mention why we invest in joint venture. As it is the only way in which we could enter the local market, we need to select a local partner which is able to participate in a public tender. The most important reason for selecting Shanghai Bell as 1 local partner is its technology capability, although we are concerned with size, relationships with the government, financial capacity and technology. Shanghai Bell has the same technological origin as *Samsung* because it is established by joint venture between Alcatel and Ministry of Information Industry, and the TDX technology of *Samsung* was developed through technology transfer from Alcatel. Thus, we decided *Shanghai Bell*, and *Shanghai Bell* is located in Shanghai.”

“Although the labor cost in the Shenzhen SEZ is much higher than other regions, it is not important locational determinant because labor cost as a percentage of total production is only 0.3%. Actually, the location of local partner is the most important locational determinant. The selection of *Kejian* was based on the existing OEM (original equipment manufacturing) relationships in the production of GSM handsets, as we felt that *Kejian* had learnt about our technology from OEM relationships in manufacturing CDMA handsets. In addition, it is designated as one of 19 CDMA production firms which possess production quotas allocated by the government. Therefore, we decided Shenzhen as the location of SSKMT as *Kejian* is a Shenzhen local firm.”

As mentioned by them in interviews, critical reason for the integration of business activities is the strategy for creating the local market through institutional embeddedness into government regulations. In particular, their locational determinant fitted with both demands through the selection of local partners that had existing technological relations

such as the same technology origin and OEM relationship, resulting in the effective institutional embeddedness of *Samsung* FDI. In other words, the locational determination of them is a result involved in their FDI strategic transition resulted from interconnected relationships among market structure, institutional regulation and technology capability.

The second reason for the strategic business integration of *Samsung* FDI firms is to cope with the strategy of local partners. The main strategy of local partners for integrating their business activities is the allocation of profits, rather than the acquisition of advanced CDMA technology from *Samsung* FDI. Therefore, *Samsung* CDMA FDI firms were not enforced to transfer core technology directly by local partners, despite the government's efforts. According to interviews with *Samsung* firms, the strategy of local partners is as follows:

“As Shanghai Bell Co. possesses the TDX technology that came from Alcatel, it is interested in acquiring the core technology of CDMA system. However, price is the most important factors in a public tender determined by *China Unicom*. Thus, what it really needs is mass commercialization production technology which leads to competitiveness in the public tender, rather than core technology. In fact, Shanghai Bell does not know even what is real core technology in the CDMA system. In the end, it is interested in the allocation of profits from a successful bid.”

“Although *Kejian* has 51% of ownership, it has not participated in management and production, but in local marketing. Also, it does not have to take care about end users because only 14 selling agencies designated from the government has a right to sell CDMA handset to China Unicom who has only right to sell it to end users in the purpose of controlling local market share. What is its main aim is to take the allocation of profits from our business activities.

Therefore, as shown in figure 2, the location of *Samsung* CDMA FDI in China is determined by the integration strategy of both *Samsung* and local partner for creating the local market and the allocation of

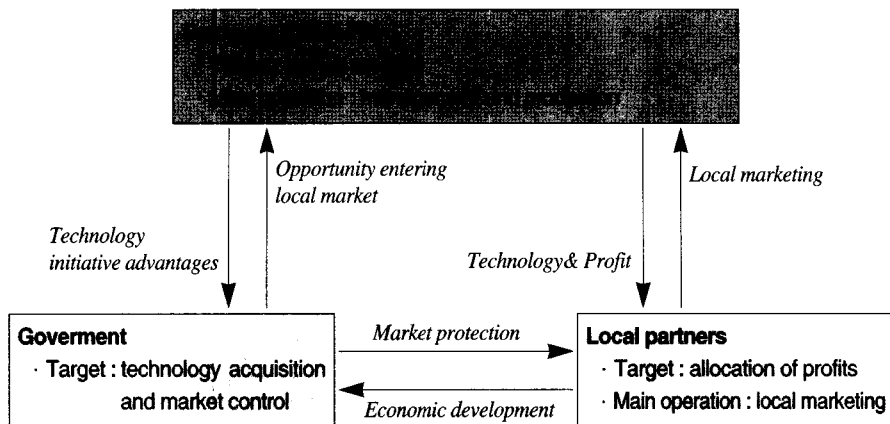


Figure 2. Locational determination of *Samsung CDMA* FDI in China

profits respectively based on institutional embeddedness into government policies.

5. Conclusion

The article has identified the fundamental reasons for the transition in the pattern of Korean FDI in China from labor-intensive FDI based on the profit defensive export-led strategy to technology-intensive FDI based on the profit offensive local market-oriented strategy by investigating the case of mobile communication FDI. It is hard, as mentioned earlier, to generalize the geography of FDI through simple case studies as the patterns and characteristics of FDI are directly associated with various business strategies involved in both internal and external economic environments. Nevertheless, the framework of the geography of FDI used in this research is significant because the FDI strategy is directly related to three main factors: First, changes in Chinese market structure resulting from the growth in the monopoly power of China Telecom, the increase in the importance of CDMA technology and the failure of GSM inward FDI in market control and technology acquisition. Second, institutional regulations from government policies such as constraints on sectoral inward

FDI, the allocation of CDMA production quota and ownership constraints to control market share. Third, the development of Korean CDMA technology capability through CDMA joint research consortium which led to the initial commercialization of CDMA technology.

Therefore, one of the main contributions of this research is that an understanding to changes in FDI strategy and location requires an analysis of changes in the market, institution and technology in both the host and the home country. This concept of changes in FDI geography as the 'articulated national development strategies of both host and home economies provides more interconnected ways of analyzing complicated international relations involved in the global economic integration. In other words, this approach illustrates the way in which the locational determinants of foreign investors are nested in more than one institutional or organizational actor.

The location of *Samsung CDMA* FDI in China is the result of strategic transition involved in the way of the interaction between organizational and institutional actors beyond the mechanism of market and hierarchy. The strategic change in both SBSMC and SSKMT resulted from constraints of the Chinese government through institutional regulations to take CDMA technology initiative advantages and control

the local market at the same time. In particular, it is reflected from the experience of failure in acquiring GSM technology and local market share. It shows that although China has undergone the transition from planned to the market economy, the nature of local CDMA market is not dependent on the market economy.

At SBSMC and SSKMT the location of *Samsung CDMA* system FDI resulted from its business strategy embedded in government policies for creating the local market the strategy of local partners, and pre-existing technology relations. Firstly, CDMA production in China is allowed only in the case of joint venture with one of 19 local partners possessing CDMA handset production quota allocated from the government. Secondly, local partners attempt to acquire mass commercialization production technology, rather than core CDMA technology. In particular, the main strategy of local partners is focused on the allocation of profits through the division of labor; *Samsung* FDI firms for management and production and local partners for local marketing. It shows the way in which the appropriate type and degree of technology transfer fitted with the demand of both technology provider and recipient are determined through the strategic paradox between government policy for acquiring technology initiative advantages and local firms for maximizing the allocation of profits. Thirdly, *Shanghai Bell* has the same technology origin as *Samsung CDMA* system from Alcatel, and there have been OEM relationships in GSM handset manufacturing between *Samsung Electronics* and *Kejian*. Therefore, the location of *Samsung CDMA* FDI in China is not determined through locational specific advantages and the mechanism of hierarchy, which is planned and authority relations within the firm. As a result, these two case studies represent that it is governed through the integration strategy of *Samsung* and local partners, and simultaneously their relations with the government.

Notes

- 1) See Lee (2001) and Lee, Lee and Ryu (2003) for details of the concepts of defensive and offensive regional restructuring.
- 2) Buckley and Casson (1976:7-38) pointed out five reasons for market imperfection involving internalization: 1) the absence of future markets; 2) the incapability of estimating price differences; 3) an increase in the costs and uncertainties due to the existence of competitors; 4) the difference in product knowledge between supplier and buyer; 5) the intervention of the government in the international market
- 3) Dunning (1981) suggested some factors for determining locational advantages: 1) the spatial distribution of input and market; 2) the price, quality and productivity of inputs such as the labour, components, raw and semi-materials, and so forth; 3) the cost of transportation and telecommunication; 4) investment incentives, trade barriers restricting imports and stability of politics; 5) government intervention; 6) language, culture and custom; 7) the degree of social indirect costs; 8) R & D and marketing
- 4) According to Cahner's In-star (2001), the Chinese mobile communication market will be the most important location, accounting for 25% of world subscriber in 2005.
- 5) As a way of supporting *China Unicom*, the government gave a tacit consent at financing from the China-China-Foreign (CCF) joint venture model until 1998, although China does not allow FDI in the communication service (ETRI 2000). This was an expedient way in which *China Unicom* was able to conform the provision which does not allow FDI and raise finance. As a result, it financed US\$1.4 billion, which is 75% of total capital investment. However, it was judged as an illegal business activity in the late 1998, and thus *China Unicom* has faced a situation that the return for foreign investors should be stopped and alliance relations with foreign investors should be re-established.
- 6) This case study was carried out by interviews with general managers of SBSMC in Shanghai and SSKMT in the Shenzhen SEZ between Jan. and Feb. 2003. SBSMC is a joint venture plant between *Samsung* and *Shanghai Bell* based on CDMA system equipment. SSKMT is also a joint venture plant between *Samsung* and *Kejian* based on CDMA handset manufacturing. Production at the SBSMC CDMA system plant in Shanghai began in November 2001 and by April 2002 output had reached about 1.45million line (www.sec.co.kr/index.jsp). Also, production at the SSKMT CDMA handset plant began in January 2002 and by Feb. 2003 output had reached 360

thousand handset per month and US\$ 222 million (In-house data of SSKMT, 2003).

- 7) Mr. Myeng-Ho Jung, a deputy general manager in SBSMC, interviewed 11 February, 2003.
- 8) Mr. Byeng-Sik Lee, a vice general manager in SSKMT, interviewed 13 February, 2003.
- 9) Mr. Myeng-Ho Jung, a deputy general manager in SBSMC, interviewed 11 February, 2003.
- 10) Mr. Byeng-Sik Lee, a vice general manager in SSKMT, interviewed 13 February, 2003

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