

Foreign Direct Investment Absorptive Capacity Theory

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Abstract

By reviewing the existing literature and empirical investigation, we build a so-called Photosynthesis model which argues that a recipient developing country only achieves benefits from FDI once they have sufficient absorptive capacity related to human capital resource, absorptive capacity of domestic firm, financial systems, physical infrastructure, technological, and institutional development. Some policies that improve host country absorptive capacities are recommended.

Key words: FDI absorptive capacity, spillovers, conversation analysis, photosynthesis

INTRODUCTION

In general, FDI can be described as a flow of capital, technology and know-how from one country to another country. Notably, the international investor usually receives returns from their investment (if not, they would not invest) while the host country is not sure whether it benefits from FDI. FDI per se can bring important benefits such as capital, advanced technology and improved managerial skills to a destination. However, *those benefits do not automatically convert to be host country' spillovers*. This process requires the host country has sufficient capacities referred to absorption. Many developing countries try to attract more and more FDI but do not recognize that they need to have initial conditions to absorb the benefits from FDI. Nunnemkamp (2004) has comments that countries should obtain a minimum level of economic development before exploiting the benefits from FDI. If not, they should not expect too much from FDI.

In fact, most poor countries have made many efforts to push their national development. One way to enable their catch up in terms of capital and advanced technology is to attract investments from foreign countries. Host countries offer much incentive policy such as

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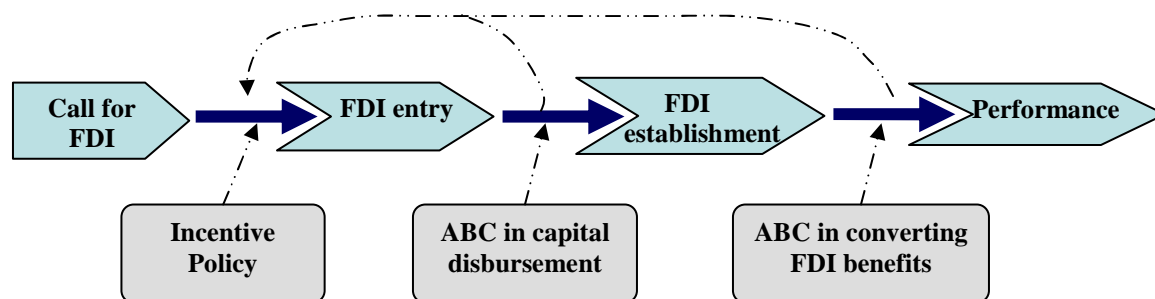
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less tax payment, tax free as well as comparative advantages. The goal in this phrase is to attract more and more FDI; thus, host countries give the international investors the most prospect of promotion, which promises the highest returns. After FDI entering, host countries continue supporting investors in order to disburse capital and put projects into practice. This stage is real challenges to host countries. If projects are still on table, neither investors nor recipient countries gets any returns. The challenge is how to make commitment by investors in the form of registering to actual capital investment. It is understandable that it takes time to prepare for project implementation, like mobilizing capital, recruiting labors. However, the gap between registered FDI and disbursement also reflects the absorbability of host economies, which fail to match the economic development, such as the poor of physical infrastructure, the shortage of skilled workers, the undeveloped of financial system. After crossing the first challenge, host countries almost either satisfy with the quantity of FDI entry and capital disbursement. The number of FDI projects, FDI capital, job creation, percentage of FDI's contribution to GDP is updating frequently. Nevertheless, these outputs are not all that countries have expected to get from FDI. Remember, the benefits of FDI are not only capital but also the advanced technology and knowledge. These externalities need to be converted into host countries' internalities by absorptive process, which requires recipient countries have initial capacities. This is definitely tough challenges. Again, host countries can only achieve the benefits of FDI through absorptive capacity. For this reason, the absorption is obviously more essential than attractiveness as FDI absorptive capacity directly and decisive influences economic growth. In turn, the absorptive capacity will enhance the attractiveness of quantity and quality of FDI inflows. What is the absorptive capacity (ABC)? What factors that host country need to absorb the benefits of FDI? These questions are addressed in this study.

Figure 1. Position of Absorption in FDI inflow



Source: Author

The first objective of this study is to address the vital role of absorptive capacity in the inward FDI process; and then calling the host country's attention on improving the internal absorptive capacity instead of concentrating on attracting as much as FDI. Furthermore, the foremost purpose of this study is to pinpoint factors help capture the absorptive capacity of host countries. In fact, previous researches have mentioned the FDI absorptive capacity on some angles. For instance, while Borensztein et al. (1998) posits that FDI provide positive growth-effect once the host country has a sufficiently highly-educated workforce to exploit FDI spillovers. Blomstrom and et al. (1994) argue that FDI had only a positive growth-effect when the country is sufficiently rich. On another aspect, Hermes & Lensink (2003) point to the necessity of a well developed domestic financial system for the process of technological diffusion associated with FDI. Girma (2005) confirms that more absorptive capacity of host country generally speeds up spillovers from multinational enterprises. However, the theory on absorptive capacity is either ad hoc and limited, nor is there a well-established theoretical paradigm for the determinants of spillover efficiency (Blomström, Globerman, & Kokko, 1999). In this paper we aim to fill this gap by developing a so-called FDI photosynthesis model, which embraces necessary factors that a host country should have to absorb the benefits of FDI. Moreover, the absorbability of FDI is clearly split in two stages in this study. One is in phase of disbursing capital investment and one is in phase of converting the benefits of FDI into host country's competences. The drawing of this distinction heightens host country's awareness of absorptive capacity in different stages of FDI flow. The absorptive capacity theory, which is introduced in this study, is a synthesis of the best features of the previous literature. This new model is significant contribution to literature as it offers an overarching model which reflects directly the factors that a host country needs in order to convert the benefits of FDI to its country's own spillovers. Since then, several avenues are identified for future research. We propose that to absorb the FDI spillovers for national economic growth, host country should have conditional development in educated and skilled labor (human capital), absorptive capacity of local firms, financial system, physical infrastructure, advanced technology and R&D, and institutions.

To support these arguments, a survey was conducted in Vietnam in 2008 to interview the point of views of authorities and international investors about the absorptive capacities. Vietnam is interesting case to do the research. While FDI registered capital is dramatically increasing, the

disbursed amounts are sharply decreasing. This country has faced the bottle-necks in inadequate power supply, shortage of qualified personnel, and site clearance. Government has vowed to speed up the FDI disbursement. Specific information is in the section four.

The paper is organized as follows. Section 2 provides an overview literature on channels for FDI transfer and FDI absorptive capacity. Section 3 expresses arguments for building absorptive capacity method. Section 4 provides some empirical results from a country case study; i.e. Vietnam to support our arguments. Section 5 concludes and provides policy recommendations and suggestions for further research.

THE PATH OF SPILLOVERS

Channels

Previous studies have defined the benefits that FDI can bring to the host country. Concurrent with physical capital is advanced technology, managerial experience, and competition as well. Indeed, De Mello (1997) states that FDI is often thought of as ‘a composite bundle of capital stocks, knowhow, and technology, and hence its impact on growth is expected to be manifold’. In the same line, Borensztein (1998) made a comparison between FDI and domestic investment in term of contributing to growth and recognized that FDI is an important vehicle for the transfer of advanced technology to developing countries. In addition, he found that FDI contributes to economic growth by enhancing the level of human capital in the host country. More extent, the Organization for Economic Co-operation and Development OECD (2002a) reports that “FDI triggers technology spillovers, assists human capital formation, contributes to international trade integration, helps create a more competitive business environment and enhances enterprise development”. In this report, they also mentioned the “cleaner” technologies transferred by FDI might lead the improvement of environmental and social conditions in the host country.

Although, the benefits of FDI are often invisible but measurable by the channels in which FDI transfers its benefit to the recipient country. Kokko (1992) indicates four ways that FDI might transfer technology to other firms namely: the demonstration - imitation effect, the competition effect, the foreign linkage effect, and the training effect. More specific, Damijan, Kell, Majcen & Rojec (2003) provide information on different channels of international technology transfer to local firms in transition countries. One channel comes from parent firm to

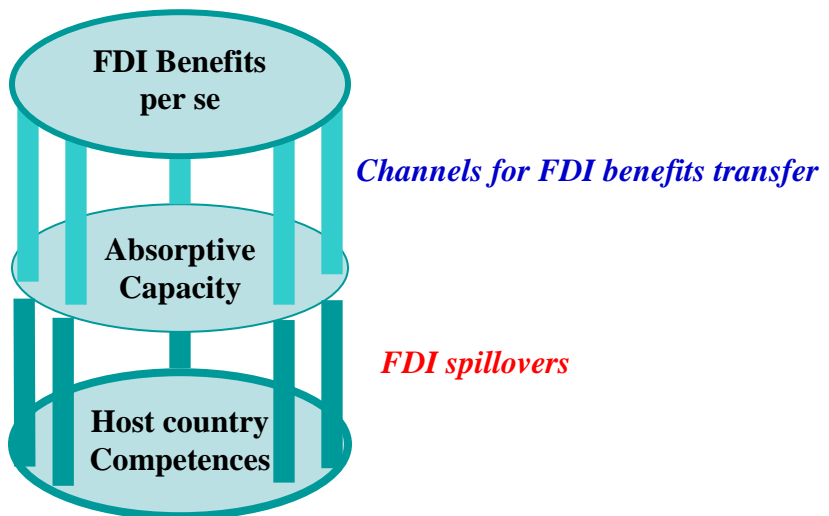
local affiliates. The other channel is from foreign affiliates to domestic firms. The technology is transferred by two ways of horizontal and vertical spillover. They also classified the vertical spillover into backward and forward linkages. By evaluating the theories on productivity, wage, and export spillovers in developing, developed, and transition economies, Görg & Greenaway (2004) identify a range of possible spillover channels that might boost productivity in the host country. Four channels are listed; imitation, skills acquisition, competition, and exports. In this research, they also mentioned the empirical evidence of horizontal spillovers effects that have occurred from multinational firms to domestic firm. Nunemkamp (2004) supports the idea that local companies might benefit by hiring workers who were previously trained by multinational corporations. Widely, Fu (2008) shows that FDI can contribute to regional innovation. He categorizes four ways, namely R&D and other forms of innovation; knowledge transfer through the supply chain, skilled labour turnovers, demonstration effects; competition effects; and advanced practices and experiences in innovation management effects. In summary, the benefits from FDI can be transferred to recipient country through two levels: macro-economic (nation) and micro-economic (firms) factors. In macro level, benefits of FDI will be transferred to host country by several channels. The first one that is technology goes through competition, imitation, foreign linkage and doing business with local firm. The second one is labor force by training, learning by doing, and accumulating experience. In micro level, domestic firm is counted as a main channel to receive the benefits of FDI involving the horizontal and vertical spillovers effects, and training effect, skill acquisition, knowledge transfer, and labor turnover.

The FDI absorptive capacity

As earlier mention, FDI naturally contains some benefits. However, these benefits need to go through a convertibility process before becoming host country's spillovers. This process requires sufficient absorptive capacity at the host country level. "Absorption" in the FDI context means the assimilation of FDI in a given host economy. Thus, "absorptive capacity" denotes the maximum amount of FDI that a host economy can assimilate or integrate into the economy in a meaningful manner (Kalotay, 2000). Specifically, there are two stages of absorbability. One is to bring FDI projects to the practice and the next one is to convert the benefits of FDI into host country's competences. In another sense, Cohen & Levinthal (1990) point that organizations need prior related knowledge in order to be able to assimilate and use new knowledge. Succinctly, in order to absorb new knowledge and utilize the benefits of FDI as much as

possible, the host country needs to have the initial development of related knowledge and capacities. The capacity mentioned most in previous studies is the *technology factor of both national and domestic firm level*, proxied by technological gap between the host and the home country of FDI. The larger the technological gap, the smaller is the impact of FDI on economic growth (De Mello, 1997). The second most mentioned factor is the labor force described by *human capital* and education, which are found to be essential for absorbing and adapting foreign technology, and to generate sustainable long-run growth (Blomström & Kokko, 2003). The third capacity is the *R&D factor*, which is the firm's ability to exploit external knowledge (Cohen & Levithal, 1990). These three factors work through the channels of FDI transfer that we have presented earlier. Beside, the host country likely needs more factors. The fourth one is *financial system*. A better developed financial system positively contributes to the process of technological diffusion associated with FDI (Hermes & Lensink, 2003). Finally, the institutional development seems to play a role. Kalotay (2000) defines *institutions* as an investment-friendly policy and administrative framework, while Durham (2004) uses the regulation of business, the protection of property rights and corruption as institutional indices.

Figure 2. Absorptive Process



Source: Author

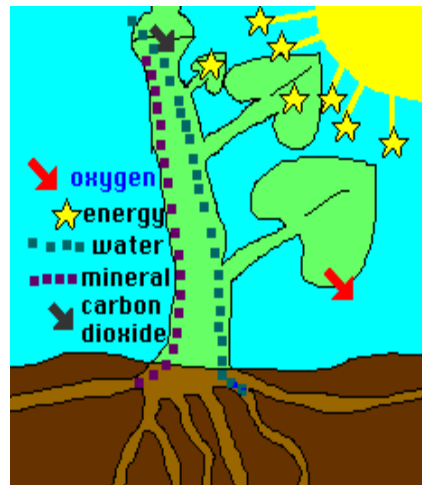
Generally, the previous studies describe absorptive capacity of a host country on two levels: the absorptive capacity of domestic firms involving the technological intensity and qualified of labor (Cohen and Levithal, 1990; Girma, 2005) and the national absorptive capacity

including the technological level, human capacity, financial and institutional development (e.g. Keller, 1995; Borenzstein, 1998; Hermes, 2003; Fu, 2008). There are some studies about absorptive capacity on particular countries (Argentina, Great Brittan, USA), regions (Central Europe, Arab area), and group of developing countries and/or developed countries.

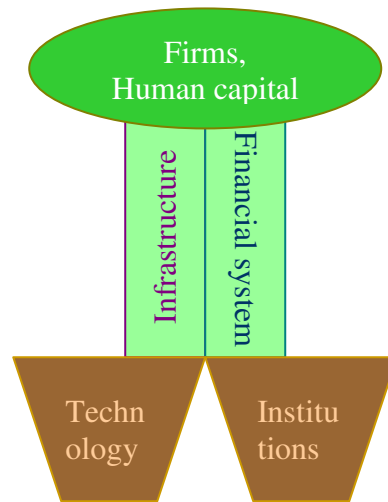
PHOTOSYNTHESIS MODEL

Green plants are the only plants that produce oxygen and make food. This process is called photosynthesis. Photosynthesis means “Putting together with light”. More specific, this takes place in chloroplasts, which have chlorophyll in them. Chlorophyll absorbs the sunlight. From sunlight, green plants combine carbon dioxide and water to make sugar and oxygen. Green plants use sugar to make starch, fats, and proteins. There are tiny pores called stomata. Oxygen and carbon dioxide enter and leave through the stomata⁵. Broadly, to convert light energy to chemical energy and store it in the bonds of sugar, the green plant absolutely needs to have leaves, stem, body, and roots. In a similar way, we propose that to assimilate FDI spillovers, the recipient country unquestionably needs to get ready the absorptive capacities, which are development of absorptive capacity of domestic firms, human capital, financial infrastructure, physical infrastructure, technology and R&D, and institutions.

Figure 3. Photosynthesis



Source: thinkquest



Source: author

⁵ <http://library.thinkquest.org/3715/photo3.html>

Absorptive capacity of domestic firms

As mentioned earlier, researchers have defined two levels that the host country absorbs the benefits of FDI. One is micro level proxies by domestic firms and one is macro level indicates by human capital, financial system, technological level, and institutional development. Local firms represents itself in micro level at the same time is one component of macro level to assimilate the benefits of FDI. Doing direct investment in abroad, investors can establish either economic organizations in the form of one hundred (100) percent capital of foreign investors or joint venture economic organizations with domestic firms or invest in the contractual forms of BCC⁶, BO, BTO, and BT, and the other forms. In whichever form, foreign business needs to co-operate with local business either being partners or sub-contractors or suppliers. Therefore, domestic firm is not only the main channel for transferring FDI benefits, but also a bridge for connecting foreign investors and host country. In the co-operation with international enterprises, if domestic firms have at least initial development in technology, qualified of workers, and managerial skills, domestic firms can learn and easily absorb the advanced technology and business skills from foreign companies. In contrast, the international enterprises can acquire and merge domestic firms. Indeed, Katolay (2002) states that the absorption process depends on the skills and capabilities of local firms and on an affiliate's commitment to the host country. Benefits of FDI can be transferred to local firms by either vertical or horizontal channels as we presented above. No matter what channel it is, domestic companies are required to have initial technological level to assimilate or image the advanced technology from FDI. In similar vein, Chudnovsky, López, & Rossi (2004) find that domestic firms with high absorption capabilities reap positive spillovers from transitional corporations presence while those with low absorption capabilities were more likely to receive negative spillovers. In the other respect, to be supplier of foreign company, local firm's capacity has to satisfy their requirements, which always relate to quality and technological issues. In addition, technology brings productivity. Productivity is one of advantage factor in competition. The development of a country cannot only rely on foreign firms but also strongly on domestic firms. It is no doubt to address that the absorptive capacity of domestic firms is the most important factor determining the degree of absorptive capacity of host countries. Nunnemkamp (2004) states the capability of local firms to absorb superior technology

⁶ BBC: Business co-operation Contract, BO: Build-Operate Contract, BTO: Build-Operate-Transfer Contract, BT: Build-Transfer Contract

and knowledge is a decisive determinant. Local firms are compared as leaves of green plants in our model as its important role in the absorptive process.

Proposition 1: To absorb the benefits of FDI, host country should improve absorptive capacity of local firms

Labor force - Human capital

As described above, one channel that FDI transfers its benefits to host country is through labor force. Besides, while studying determinants of FDI absorptive capacity, the researchers have also described human capital as a crucial factor in promoting the absorptive capacity of local firms and nation as well. Consequently, labor is channel for transferring and receiving the FDI benefits. The transfer of benefits of FDI to labor goes through training, learning by doing, accumulating experience. Then, labor is the force to implement the know-how conveyed. Better educated and skilled labor is better know-how received, and better performance achieved. Borensztein, De Gregorio, & Lee (1998) express that FDI gives positive spillovers only in a country which has a minimum threshold stock of human capital with a sufficiently qualified labour force. Likely, Van den Berg (2001) states that the main condition is the quality of the labor force determine an economy's ability to create new ideas and adapt old ones. In the disbursement stage, labor force is indispensable to put project in practice. The shortage of qualified people might cause the slow and stuck implementation. The low educated and skilled workers of host country definitely impact on the disbursement of investment and mirror a negative image about host country capacity in FDI promotion. Chen (1990) confirms that countries with higher amounts of investment in human capital will be able to gain more benefit from FDI. Hence, to gain the benefits of FDI, the host country certainly need to have good quality of human capital. Return to green plants, only leaves can convert the sunshine into chemical energy. Only human has capacity to understand, assimilate and create new knowledge. Human capital is vital factor needs to absorb FDI benefits.

Proposition 2: To absorb the benefits of FDI, host country should improve its capacity in educated and skilled labor force

Financial system

The financial system is central to the functioning of the economy and modern day life. It is the complex of institutions, including especially banks, the government and international institutions. It regulates and facilitates payments and links lenders to borrowers and investors with the assets they invest in⁷. With these function, financial system is a key tool to implement FDI activities such as disbursement of investment capital; transfer money from oversea into recipient country; payment for building material, raw material, labor cost; collection money after selling, transfer income out of country, and the other businesses. All such basic activities need to have a financial development. If the investment capital is not disbursed, the project process might be late or stagnant, even closed down. If the investment cannot be implemented, the attract FDI is nonsense; hence the host country receives nothing from FDI. For that reason, financial development is vital component to accelerate the recipient country's absorptive capacities and to facilitate the FDI operation in the host country. Alfaro, Chandab, Kalemlı-Ozcan, & Sayek (2004) state that FDI is associated with faster growth in host countries with comparatively well developed financial markets. Countries with better financial systems can exploit FDI more efficiently. Hermes & Lensink (2003) point out that more local developed financial system positively contributes to the process of technological diffusion linked with FDI. Durham (2004) also studies financial market development as an indicator of the relationship between the effect of FDI and equity foreign portfolio investment (EFPI) and states that financial development is contingent on the absorptive capacity of host countries. Sakik and Bolbol (2003) and Krogstrup & Matar (2005) find evidence in Arab countries that poorly developed financial system is not able to benefit from FDI. Plants need to have body and stems to transfer nutrition to breed them self. Host countries need to have deeply financial development to absorb capital investment and exchange business activities. Like the body of a plant, financial system acts as an integral factor to absorb FDI spillovers in a host country.

Proposition 3: To absorb the benefits of FDI, host country should improve its capacity in financial system

Physical Infrastructure

According to O'Fallon (2005), physical infrastructure is described as a service system associated with energy, water supply, transport, telecommunications, sanitation and waste

⁷ <http://www-personal.umich.edu/~alandear/glossary/f.html>

facilities, as well as flood protection and drainage. Concerning transportation, infrastructure can be railway, road, air way, air lines, water road, ships, which can carry raw material to manufacturing point and final goods to consuming point. The bad infrastructure can cause the increase of cost and the waste of time. In “Building and preserving the nation’s roads” (Texas Transportation Researcher, 2005) addresses that the congestion cost for the Los Angeles area was estimated at US\$ 9.325 billion in 2005. One extra day for keeping one container of 40 feet at Sai Gon seaport is US\$ 1.92. Time is money, and business is to earn money. Wasted time and increased cost probably bring less profit to investors and host country. In addition, a bad infrastructure system can cause the slow, even stuck in proceeding of investment project. This means the host country not only receive no benefits from FDI, but also cause the confusion in society. For instance, the demand of electricity goes up as the increase of FDI, especially manufacturing projects. Once the host country’s power does not have enough capacity to supply, the energy must be served to the production first; thus the resident has to suffer the shortage of electricity and the standard living is decreased. Similarly, Kessides (1993) concludes that infrastructure contributes to the quality of life by creating amenities, providing consumption goods (transport and communication services) and by contributing to macroeconomic stability. Regarding soft infrastructure, most information and communication go through internet, telephone, and digital communications. With broaden, speed, stable internet, for instance Asymmetric Digital Subscriber Line (ADSL), High data rate Digital Subscriber Line (HDSL), Single line Digital Subscriber Line (SDSL), Very high data rate Digital Subscriber Line (VDSL) could bring business communications through smoothly. It is no doubt to say that infrastructure is seen as an important factor pushing the convertibility of FDI’s benefits to the host country’s spillovers. In a study the Organization for Economic Co-operation and Development (OECD) (2002) reports that an inadequate infrastructure is a major impediment to entrepreneurial activity, while a well-developed information and communication technology system may lead an upward shift. Physical infrastructure has been playing an imperative role in supporting FDI activities. Similar to financial systems, a sound infrastructural system might enhance the absorptive capacity of host country.

Proposition 4: To absorb the benefits of FDI, host country should improve its capacity in physical infrastructure

Technology and R&D

Technology is a broad concept and refers to knowledge and equipment which satisfies human needs or wants (Technology Guide, UNESCO). As technology can transfer from more to less developed countries (Keller, 1995), most researchers agree that advanced technology can be one of the main benefits that host country can expect from FDI. However, the benefit transfer much depends on the host country capacity of technology. The technology gap between the home and host country determines the host country absorptive capacity. In developing country as Vietnam, the new technology and R&D are mainly developed by national institutions, universities, state owned companies and few by private companies. Consequently, technology and R&D should be mentioned on two levels of nation and firm. A seaport can accept a ship with tonnage of 50,000 to 150,000 must be different with a seaport can accept only a ship with tonnage of 30,000. More goods, less cost are example. A big seaport is not only a issue of infrastructure but also the technological development. Indeed, comparing with handling containers by hand, the application of information technology software is more effects. Such system, for instance the CATOS can deliver with advanced functions like real time grounding and dispatching, and equipment pooling. While the seaport, which uses CATOS can provide its customer the better suited functions to arrange more interface with external system than the one, which only uses traditional system. Borensztein et al. (1998) find that FDI contributes to economic growth only when a sufficient absorptive capacity of advanced technologies is available in the host economy. The higher efficiency of FDI would result from a combination of advanced management skills and more modern technology. De Mello (1997) states that the larger the technological gap between the host and the home country, the smaller the expected impact of FDI on economic growth is. The aim of host country while calling for FDI is to utilize the advanced technology of FDI to enhance the economy. This means the host country has to have an initial development in technology to assimilate this benefit. In the same vein, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), (1984) reports that the technological absorptive capacity of a host country has a major impact on the effectiveness of technology transfer. Regarding the technology in the level of firm, Kokko (1996) writes that domestic firm can benefit only if the technology gap is not too wide so that domestic firms can absorb the knowledge available from the multinational. Usui (1983) finds that transfer of technology will be effective only if the recipient firm already possesses an adequate base to

absorb the acquired technology without recourse to broad-ranged and long-term services from the foreign affiliate. These opinions meet the discussion in the part of firm of this study. As a part of innovation, the level of R&D of the host country is considered one of factors of absorptive capacity. Once the level of R&D of the host country is developed, the assimilation of advanced technology of FDI is easier. Fu (2008) expresses that the globalization of R&D may provide an opportunity for developing countries to catch up on the technology frontier. Cohen and Levithal (1990) find that a firm's ability to exploit external knowledge is often generated as a byproduct of its R&D, and R&D not only generates new knowledge but also contributes to the firm's absorptive capacity. Technology acts like the roots of green plants and is the foundation that can boost the development of a country. An advanced technological level provides a sound basis for the absorption of FDI spillovers.

Proposition 5: To absorb the benefits of FDI, host country should improve its capacity in advanced technology and R&D

Institutional development

Some studies have also tested the importance of institutional factors for FDI absorptive capacity and found a positive relationship. Concerning FDI, the proxies of institutional development are FDI law/ regulations and administrative system of the host country. When doing business in a particular country, the first consideration of international investors are potential profits and the right of using the profits. Once the property rights are protected by the law, the international investors feel secure about their investment not be nationalized or confiscated by administrative means; they might expand the investment and develop their investment. Therefore, this possibility may bring additional benefits to the host country. On the other hand, the opaque and unstable in regulations will lead the investors to a maze. To escape the complicated situation, the investors just quickly move their investment to another destination. While testing the driving forces of FDI by using factors of local markets development, availability of complementary factors of production, and institutional development, Durham (2004) defines the institutional development as an investment-friendly policy and administrative framework indicated by the regulation of business, the protection of property rights as well as in terms of strict corruption regulation. He finds that the regulation of business and the protection of property rights are positive relationship with FDI. Krogstrup & Matar (2005) also applied these

indicators while investigating the absorptive capacities in the Arabian world. They state that high levels of regulatory quality to be in a position to gain from FDI. In the time of investment in the host country, the investors surely need to deal with administrative documents. For example, if an investor wants to build a professional training school. The investor needs to contact with ministries of Land Management, Education and Training, Labor, and Construction. Instead of having relations with several organs, the investor can only contact with “One Stop” in a representative office. To manage such mechanism, it requires the host country owns a foundation of institutional development. Clearly, the development of institutions will facilitate the FDI business, and accelerate the absorptive capacity of the country. Durham (2002) addresses those countries with higher legal standards likely support FDI more efficiently. Similarly, Nunnemkamp (2004) concludes that institutional development seems to be required to benefit from FDI. Institutional development expresses the development of society and the governance level of the country. A stronger institutional development could lubricate the absorption in a more convenient process. It resembles the roots of a plant. Wealthy roots imply a wealthy plant.

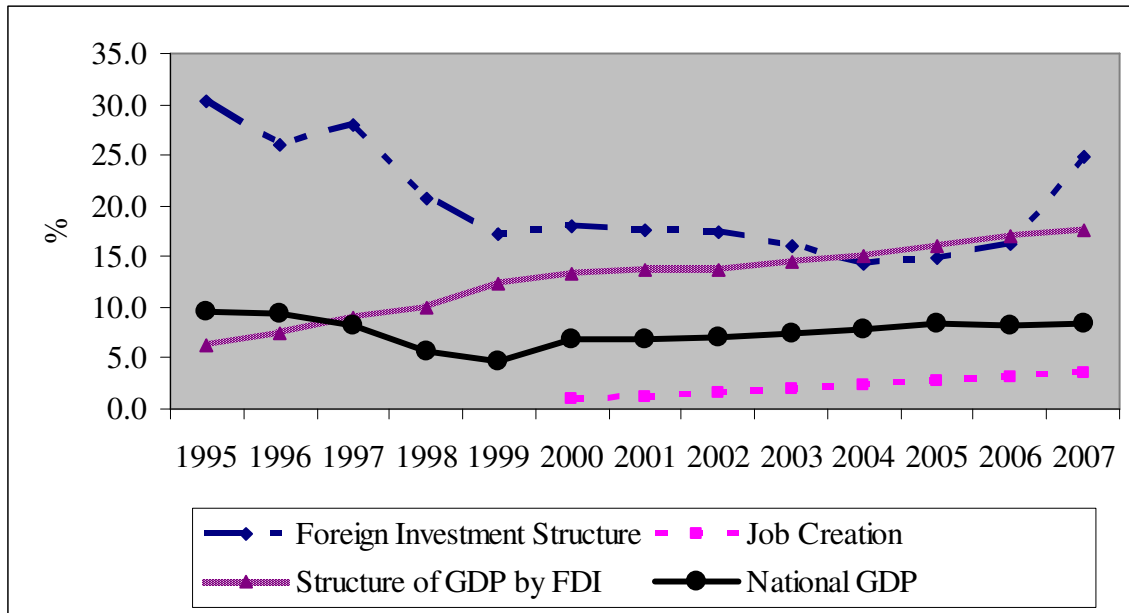
Proposition 6: To absorb FDI spillovers for national economic growth, host country should improve its capacity in institutional policies

EMPIRICAL EVIDENCE FROM COUNTRY CASE STUDY: VIETNAM

Vietnam is located in the corner of the East and the South of Asia. It is in the most dynamic area in the world, among such countries as China, Korea, Japan, Singapore, Malaysia, and Thailand. After the serious war, its economy is restored from the ruin. During 1970s-1980s, the socialist economic system with a centralized and national planned economy was lead the economy. Unfortunately, because of serious mistakes in policies, in guidance, and implementation (*VI Communist Party Document*), the plans were unsuccessful. Inflation increased 30-50% in 1980s, and reached 587.2% at the end of 1985, and peak of 774.7% in 1986 (*Vietnam Economic Features*). In 1987, Foreign Investment Law was published, which was also the time Vietnam started its economic reform and opening trade with all countries and regions. After “doi moi”, Vietnamese economy has achieved remarkable growth of GDP; it has reached around 8% per year recently. Conformably, FDI has largely contributed to the development. FDI capital has been increasing at the same time with augmenting in GDP contribution. The annual GDP growth of the foreign invested sector has been gone up from 6.3% in 1995 to 17.66% in

2007 and its speed is always higher than the State and domestic private sector. In addition, jobs were created by FDI are gradually increasing from 0.99% in 2000 to 3.49% in 2007. In a report⁸, Ministry of Planning and Investment of Vietnam states that FDI has brought into play benefits to Vietnam's economy as (1) increasing investment capital, (2) opening international markets, (3) imposing the development of infrastructure, (4) creating more jobs and higher trained-education human resources.

Figure 4. FDI contribution in capital, job creation, and GDP in Vietnam



Source: based on data from GSO

The above externalities are likely positive spillovers from FDI to Vietnam. How to take the full advantages of these benefits and assimilate them? In addition, Vietnam has been faced the huge gap between FDI registered capital and disbursed capital in recent time. In the Consultative Group Meeting for Vietnam in 2007, the Vietnamese and international experts define the shortcomings of infrastructure, human capital, and institutions caused this bottleneck. In the same vein, Mr. Nguyen, Huu Thang, Director of Foreign Investment Agency of MPI explains that the Vietnamese economy could not swallow all FDI projects in a moment, it needs capacities to absorb. For that reason, we aim to explore which internal factors influence the national absorptive capacity in Vietnam and to bring our theoretical model to test in practice.

⁸ MPI website: [Situation, solution strengthens with calling foreign investment in next phase](#)

The data collection mainly based on in-depth interview and reports. Our survey was conducted in July and August 2008 in seven provinces of Vietnam. These places are chosen in some domain part of Vietnam in Northern, Middle, Southern, in delta, mountain, border, and special areas. These provinces have hold differences in the level of attractive FDI. Some provinces are in high level such as Ho Chi Minh City, Ha Noi; some are in average level such as Da Nang, Quang Ngai, Can Tho, and some are is low and very low level such as Ben Tre, Lang Son. The government agencies are in central and provincial level. We invited 42 people, who are leaders of their institutions of Vietnamese central and provincial authorities, professional experts, and domestic and foreign investors. (see appendix A.1).

The general question is *which factors influence the absorptive capacity of Vietnam?* Beside, some specific questions were given to specific groups. In the group 1 and 2, the members who are policy makers and investment promotion agencies were asked for a general evaluation about FDI benefits in Vietnam and about future policies for improving absorptive capacities. With group 3, members (professional institutions) did analyze the role of their institution in absorption process and reflected on the role of the other institutions. Then, they discussed future policies to enhance absorptive capacity. The focus on the absorptive capacity of domestic firms and their expectation from government policy's ability to leverage firm's absorptive capacity were asked to local businesses. The request of dealing with barriers while doing business in Vietnam was towards to foreign investors. We also asked their willingness to help Vietnam to earn benefits from FDI and the factors needed to absorb spillovers.

To interpret the discussion, we use Conversation analysis (commonly abbreviated as CA), which is the study of talk in interaction.

In general, the interviewees express quite similar opinion about the factors determine FDI absorptive capacities. Human capital, the physical infrastructure, as well as institutional policies are most mentioned.

Regarding the firm factor, the literature has stated the absorptive capacity of a country depends on the absorptive capacity of domestic firms in terms of assimilating the advanced technology, knowhow, managerial skills from FDI. Domestic firm is channel to receive the benefits of FDI; it also produces goods for society and is in front of competition. Generally, there are two kinds of local firms. One is one hundred percent of domestic capital and one is joint-venture with foreign investors. Broadly, Vietnamese local firms are weaker than multinationals

in terms of capital, advanced technology and managerial experience; the pressure of competitiveness has forced local firms to improve their capacities. Many domestic businesses have been upgrading their technological level in order to become main suppliers to multinationals gradually. Some dominant industries such as aviation, gas and petrochemistry, telecommunication, textile and garment, bank and finance are almost the same the development of the world. These companies not only can equally compete with foreign companies, but also large contribute to the national absorptive capacity, especially in carrying out FDI projects. On the other hand, private companies have often faced the loss of employees and a shortage of high educated labor. People who have a higher education prefer to work for foreign company, earning higher salaries and more learning opportunities. Local firms need to have a better promotion policy to keep labor. In addition, if the local companies want to invest in advanced technology, they need a large amount of capital; therefore, they really need the support from government in order to upgrade their capacity. The weakness or shortcoming of local firms' capacity can pull the national absorptive capacity down. For example, people aware that the garment and textile is quite popular in Vietnam because of good skilled labor but low cost. However, the material for producing like cloth, button, zip-faster have to import to Vietnam from abroad since local products are not met foreign producers' quality requirements. As a result, Vietnam earns not much the benefits of advanced technology from FDI while only doing outworks. Once private sector is developed, it might leverage the country's competitiveness and absorptiveness. Private companies probably can be either suppliers of foreign companies or partners. This is really good to promote the convertibility of FDI benefits into national benefits. In the other aspect, domestic firms that have cooperated with foreign companies seem to receive more benefits. Worker capacity is improved by training, learning by doing and accumulating experience. The advanced technology, know-how and managerial knowledge are transferred. Again, the intensity of assimilating knowledge relies on the education of human capital and existing technological level of domestic company. There is the case of Vinamilk and Campina. In their project, the Vietnamese farmers have learned how to organize a bio farm, how to breed cows in order to produce as much milk as possible, and maintain clean and fresh milk as well. The "clean technology" in farming is really new application in Vietnam and also in the world. The cooperation is going on well because we have a strong human resource from top manager, middle manager to workers. We often upgrade our technology used, especially in processing

milk. We are not less development than our partner in some extents. This is one of our advantages in cooperation. In the other words, to obtain the nation's absorptive capacity, the domestic firm's absorptive capacity must be built up.

Most people accept that the Vietnamese labor force is young, dynamic, energetic as well as educated and endowed with good skills. However, the unskilled labors are abundantly available while highly educated and skilled labors are scarce, especially at the middle management level. In fact, the light industry and food processing industry which require high amounts of unskilled labor have obtained 20.33%⁹ of FDI registered capital industries in Vietnam. Such FDI flows have only brought simple technologies, which contribute only marginally to local learning and skill development. While the investment projects with high technology require consistent educated and skilled labors, the Vietnamese market is lacking. The shortage of this human capital has been effecting the implementation of projects and economic growth eventually. This proves that the level of education of human capital is first condition to enhance the absorptive process. To fill the gap, the Vietnamese government has strongly pushed many projects to improve human capital such as establishing high quality foreign universities, training of 20,000 PhD, professional experts and key managers, as well as by reforming the education system, Mr. Phan Quang Dung, Deputy Chief of the Office and Secretary to the Minister of Ministry of Education and Training informed.

In terms of the financial system, people who have been working for banking as well as foreign investors said that the Vietnamese current financial system is quite well developed and therefore meets the demand of market. The financial system of Vietnam can be categorized into three groups, banks, stock, and insurance. On the Vietnam market, there are seventy eight banks including six state banks, forty joint stock commercial banks, and thirty two foreign banks. This system has enough capacity in terms of human resource, managerial skills, and advanced technology to handle the intensive business. The banks and financial institutions apply the international standard accounting systems. Furthermore, they have been using a multi payment among banks system since 2000. On the other hand, the relevant legal system is tolerable for financial activities. Subsequently, the financial system in Vietnam is sound enough for the majority of business services. Concerning the role of the bank system in FDI process, its services are crucial contribution to the absorption of FDI spillovers. Generally, the financial system

⁹ FDI in Vietnam from 1988-2007, MPI database

supports the national absorptive capacity by transporting money. It is the channel where money from abroad comes to Vietnam. It is also the system converts project's capital to investment's actual capital and pervades them to every nooks and crannies of the economy. In addition, the bank services are such as giving domestic as well as international investors the advice in investment by providing financial risky information; providing management and payment services; and offering solutions to minimize the risk and maximize the profits have propped up the investment successfully. In summary, based on well development, the financial system has supported the Vietnamese economy to distribute the capital investment and to absorb the benefits from FDI.

Talking about physical infrastructure, the interviewees stressed that it is an inadequate system. This is said to be a real obstacle for developing business, especially land road and electricity convey major problems. In the delta region, because of the rivers, people spent a lot of time travelling by ferry; while in the middle region, people have built so many seaports that they do not have enough products for shipping. This has caused an obstruction and the cost of production rose. It is not good for circulation of goods and services. One problem that international investors have complained is available clean land for use. It is also the serious trouble that the government has faced. The compensation and resettlement of effected people always serve severe negotiation and extend the time of cleaning land. As a result, the investors do not have land to build their manufactures. They have to wait; they have to pay the pre-project costs while Vietnam gets nothing from foreign investment. This is becoming serious obstacle to put FDI project into practice. However, it is lucky that the communication, aviation and logistics industry are well developed as well as still meet the demand of growth market. These industries obtain advanced technology and sound strategy; therefore, their services have actually engaged to the absorption process. Evidently, an initial developed infrastructure could well support the country to take the most advantages from FDI.

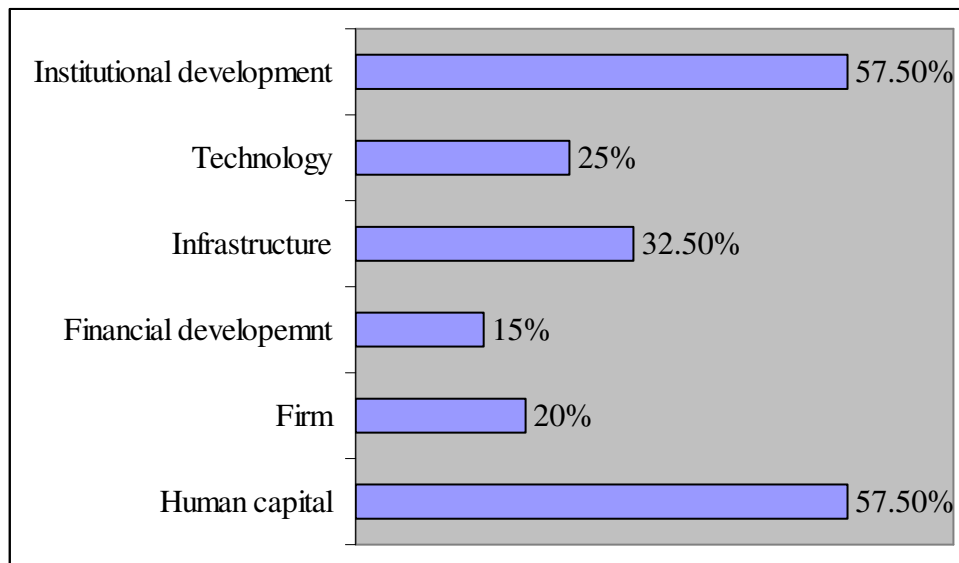
When doing the interviews, not many people have raised the issue of technology. However, when we asked them, the interviewees confirmed that a sufficiently high level of technological knowhow is very important factor to catch up the advanced technology of FDI. If we do not have similar experience, it is very difficult to understand the new technologies from multinationals, Mr. Minh H. Le, Ministry of Information and Communication said. One of the reasons why some industries such as the aviation, logistics and financial system easily adapt or

get familiar with international business is because much investment is spent on upgrading their technologies. Vietnam is still not an industrialized country in the main; the technological level has been upgraded, but as not high as industrialized countries. As a result, Vietnam receives more FDI with low or backward technology in small size of projects. There are not many projects with hi-tech like Intel. The Vietnamese government has strongly pushed the development of domestic technology and R&D concurrently with attracting the FDI with high technology. There are two high-tech centers in the North and the South of Vietnam to promote this progress. Visibly, with high technology, the host country can absorb better the benefits of FDI and attract more hi-tech FDI.

Recently, the Vietnamese government has strongly moved forward the public administrative reform to build up and strengthen institutions, to renovate the process of developing and issuing normative legal documents, to ensure strict and transparent laws, and to reform administrative procedures. The performance somehow enhances the business operation by the “one door” mechanism. This process saves time and appears to be transparent to foreign investors. Moreover, Vietnamese investment law guarantees to protect investor’s property right and neither nationalize nor confiscate by administrative means. All make investors trust on government; as a result, investors either expand their investment or re-invest their returns. However, some investors have complained about rapid changes in regulation, complicated procedures, and bureaucracy in some places. In this case, investors have to either suffer the situation in order to continue their business, or give lobby to get through, even drop out their business. When investors move their business to the other countries, not only the registered capital becomes meaningless, but also the FDI promotion image of Vietnam is pulled down. On the other hand, where the local government is a friendly government, the international investors do business with more convenience and they, in turn, are willing to support the region by training their labor force, transferring know-how and even doing charity activities (Fusheng, Appolo, Kum Woo, and Bio Rat Vietnam). Perceptibly, the development of host country institutional system can influence FDI operations either positive or negative. In turns, the positive or negative spillovers of FDI much depend on host country institutional development. Well developed institution will support and push FDI activities on progress; it means the country can absorb FDI’s benefits more.

Here are the interviewees’ responses on the factors influence the absorptive capacity.

Figure 6. Response on the absorptive capacity factors



Source: author

CONCLUSIONS, POLICY RECOMMENDATION AND FURTHER RESEARCH

Poor countries often look on short term goals in order to quickly cover their shortage. They pay less consideration on absorptive capacity because this process requires time and a lot of efforts before achieving performance. Thus, FDI seems to be the best solution to fill a lack of capital, create job, and collect tax. However, FDI holds more benefits such as advanced technology and knowhow. These benefits are not enough to develop the country sustainable. Dornbusch, Fischer, and Startz, (2003) state economic growth is mainly caused by the available amount of resources in the changing economy. The principal resources are **capital** and **labor**, and the possible changes in efficiency of production factors. Efficiency improvements are called productivity increase and productivity is increased through improved **technology** and more capable workforce. Seemingly, FDI obtains enough conditions that a country needs to develop the economic growth. Nevertheless, it should remember that host country could not get positive spillover of FDI if the external benefits have not converted to internal benefits. It is crucial message that this research gives. The converting process asks host country has absorptive capacities. This paper is to emphasize on the opinion that the poor country definitely needs to develop their initial capacity to absorb the benefits of FDI before calling for FDI massively. Absorptive capacity has been concerned scattered in previous studies. Therefore, there is still shortage of a synthesis theory. Most authors have focused on either only one factor or some

factors in their studies. Apparently, there is no overarching model which reflects directly the factors that a host country needs in order to convert the benefits of FDI to its country's own spillovers. This research fills this void by building a model, which learns from photosynthesis of green plants. Green plants necessitate leaves, stems, body and root to absorb and convert the sunlight, water into nutrition to raise themselves. Wealthy leaves-body-root, wealthy plant. Likewise, a country, principally a poor country necessitates having conditional capacity in order to assimilate the benefits of FDI to leverage the national development. Our study guides the research on absorptive capacity to normative and structural approaches. Beside factors used in the previous researches, new points in this model are the absorptive capacity of domestic firms is involved as a component of national absorptive capacity. In addition, the infrastructure development is added as other component of the absorptive capacity of host country. Furthermore, the absorptive capacity is explained clearer by screening it in two phases of project implementation and internal ability development. This paper is successful develop a model that can conduct any survey to capture the FDI absorptive capacity of a country. To convert benefits from FDI to a recipient country, we prove that a host country needs an initial level of economic development in terms of human capital, absorptive capacity of local firms, physical infrastructure, financial system, technology, and institutions. Human capital and absorptive capacity of domestic firms are vital elements for a nation in order to absorb FDI spillovers. They are the main channels for FDI transfer to the recipient country. Educated labors can quickly absorb the new knowledge and modern techniques. Labor does not mean only the number of workers, but also the quality of human capital, which necessitates adequately of education and skills. Ultimately, labors use the techniques to produce goods to society. Better human capital can assimilate technology better, and give more productivity. Domestic firms are bridge of FDI and host country. With equivalent in educated and skilled labor and technology level, local firms might easily assimilate the advanced technology of FDI. At the same time, domestic firms could rapidly catch up the know-how and managerial skills transferred from FDI. Infrastructure and financial system is to boost the transport of goods and support business and disburse investment capital in particularly. Domestic technology is foundation to improve productivity and take delivery of advanced technology of FDI. Thus, this factor cannot be ignored. Lastly, institutional development is also indispensable. It can be either a barrier or grease to the absorptive process by public administrative system and policies.

Kalotay (2000) argues that FDI absorption can only be successful if the recipient country and domestic firms have risen to adequate levels of capacities. This means that developing countries should aim to improve their abilities before attracting more FDI inflows. Our study invites investors and policy-makers to consider the requirements for an effective strategic task when they call for FDI and develop new regulations.

First of all, the host government should have a promotion policy aimed at closing the technological gap between the home and host country. On the other hand, policies directed towards improvement of firm's absorptive capacity and competitiveness must be formulated and issued. The government should support firms in their R&D investments, in their efforts to increase their science and technology's level (new technological process/ equipment), and in training human capital. This process requires a large amount of capital and takes a long time to recoup the investments; therefore, firms really need financial support from the government in these fields. Girma (2005) argued that firms need a certain level of absorptive capacity before they can benefit from technologies developed by other firms. In addition, the science and technology at the national level also needs to be upgraded.

Secondly, the empirical evidence verifies that countries with low levels of human capital can only attract lower level technologies; vice versa, country with high levels of human capital might be able to attract large amounts of knowledge intensive technologies from FDI. Obviously, advanced technology can contribute more to the host country development. There is no doubt that a sound policy to improve education and human capital will enhance the absorptive capacities to generate sustainable growth. Girma (2005) again states that education and training policy is the key to facilitating spillovers from FDI. Better education and training would add to the supply of qualified labour in developing host countries and improve prospects to benefit from technology transfers and spillovers (Görg & Greenaway, 2002).

Thirdly, the host country should aim to improve the financial and physical infrastructure as well as the institutional development to support the absorption process to take place smoothly. Normally, FDI flows come from countries that have abundant capital and have higher technological levels. Therefore, the quality and type of FDI are important for the significant innovation promotion effect of FDI. As a result, if the host country wants to get the advanced technology, they should promote necessary conditions to receive quality FDI.

These three policies should be applied in conjunction to improve the internal capacity of the host country. Last but not least, the host government should have a policy to support external capacity building organizations. Nowadays, international investors do business abroad not only to earn money but also to share the responsibility with the poor countries. More and more business associations have talked about the willingness to support recipient country to achieve the benefits from FDI. If international investors help host countries to absorb the benefits from FDI, they lose nothing (because the benefits of FDI are still there). If the investors spend efforts such as training the workers, sharing the know-how, they can not only enhance the host country absorptive capacity, but also make the absorption process go smoother; and thereby they indirectly contribute to global development. Based on this thought, the host country should target policy to encourage the help of multinationals.

In terms of future research we strongly suggest testing our model by a national survey. More efforts are needed to come up with sound indicators to measure the factors used in the model. It is crucial to recognize a country's current absorptive capacity by conducting an evaluation survey. Such an investigation should make a comparison between either a developing country and a developed country or similar region to discover what the precise differences in absorptive capacities are, and what the country has done to improve their absorptive capacities.

In summary, the FDI photosynthesis model that is developed in this paper is a combination of the best feature of the previous literature and the empirical factors. This gives the most effective methodology and guidance to recognize the absorptive capacity of a developing country. This research also brings new and fresh awareness of the absorptive capacity to host country. Since then, the government can evaluate the current capacity and foremost, the realistic policy and strategy is issued in terms of attracting FDI in order to leverage the national development.

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APPENDIX

A.1. List of agencies interviewed

	Agency	Level	Region	Attractive rank
G1	<i>Group of policy makers</i>			
	Ministry and Department of Planning and Investment (MPI)	Central government		
	Investment Promotion Center of MPI in Central region	Central government		
	Investment Promotion Center of MPI in Southern region	Central government		
	Department of Planning and Investment of Can Tho province	Provincial government	Southern	Middle
	Department of Planning and Investment of Ben Tre province	Provincial government	Southern	Low
	Department of Planning and Investment of Ho Chi Minh City	Provincial government	Southern	High
	Department of Planning and Investment of Da Nang province	Provincial government	Middle	Middle
	Department of Planning and Investment of Lang Son province	Provincial government	Northern	Low
G.2	<i>Promotion centers</i>			
	Investment Promotion Center of Can Tho province	Provincial government	Southern	
	Investment Promotion Center of Ben Tre province	Provincial government	Southern	
	Investment Promotion Center of Da Nang province	Provincial government	Southern	
	Industrial Park, Can Tho province	Provincial government	Southern	
	Industrial Park, Ben Tre province	Provincial government	Southern	
	Thu Thiem New urban Area, Ho Chi Minh City	Provincial government	Southern	High
	Dung Quat Economic Zone	Provincial government	Middle	High
G.3	<i>Professional Institutions</i>			
	Ministry of Education and Training	Central government		
	Ministry of Information and Communication	Central government		
	Institute of Science and Technology Development	Central government		
	Vietnam airline in Central region		Middle	
SaiGon Port		Southern		

	Vietnam Electricity Group		National	
	PACE, Education institution		Southern	
	Asia Commercial Bank		National	
G.4	<i>Domestic companies and Foreign Investors</i>			
	Dai Nam Long & Partner		Southern	
	Vinamilk		National	
	One Connection		Southern	
	Techconvina Group		National	
	Bio Rat Vietnam		Southern	
	Silvermill		Southern	
	SGN logistics		National	
	Fusheng Vietnam		Southern	
	Kum Woo		Middle	
	Friesian Foods		National	
	Appollo Vietnam		National	
	Foxconn		National	
	Paribas Bank		National	
	Bank of America		National	
	Esaote Europe BV.		National	

A. 2 Most absorptive capacity factors used in some previous researches

Author	<i>Cohen & Levital</i>	<i>Chen</i>	<i>Keller</i>	<i>De Mello</i>	<i>Blomstrom et al.</i>	<i>Borenzstein et al.</i>
<i>Year</i>	(1990)	(1994)	(1995)	(1997)	(1996)	(1998)
<i>Level</i>	<i>firm</i>	<i>nation</i>	<i>nation</i>	<i>nation</i>	<i>review</i>	<i>Nation</i>
Technology		●	●	●	●	●
Human Capital		●	●			
R&D	●					
Financial System						
Physical Infrastructure						
Institutional development						

Author	<i>Kalotay</i>	<i>Narula</i>	<i>Hermes & Lensink</i>	<i>Blomstrom et al</i>	<i>Gorg & Greenaway</i>	<i>Nunnem kamp</i>
<i>Year</i>	(2000)	(2003)	(2003)	(2003)	(2004)	(2004)
<i>Level</i>	<i>nation</i>	<i>nation</i>	<i>nation</i>	<i>nation</i>	<i>review</i>	<i>Nation</i>
Technology		●			●	

Human Capital	•			•		•
R&D					•	
Financial System	•		•			•
Physical Infrastructure	•					
Institutional development	•					•

Author	<i>Durham</i>	<i>Alfaro et al</i>	<i>Chundnovsky et al</i>	<i>Girma</i>	<i>Krogstup & Matar</i>	<i>Fu</i>	<i>Yi</i>
Year	(2004)	(2004)	(2004)	(2005)	(2005)	(2008)	(2008)
Level	nation	nation	nation	firm	nation	region	Nation
Technology			•	•	•	•	•
Human Capital	•				•	•	
R&D						•	
Financial System	•	•			•		
Physical Infrastructure							
Institutional development	•				•		

Source: Author

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