



**Capacity Building Project for Policy Research to Implement Vietnam's
Socio-Economic Development Strategy in the period 2001-2010**

RESEARCH REPORT

**THE IMPACTS
OF FOREIGN DIRECT INVESTMENT
ON THE ECONOMIC GROWTH
IN VIETNAM**

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LIST OF ABBREVIATION

APEC	Asia Pacific Economic Cooperation forum
ASEAN	Association of South East Asian Nations
ASEM	Asia Europe Meeting
CIEM	Central Institute for Economic Management
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Products
GSO	General Statistics Office
JETRO	Japan External Trade Organization

MFN	Most Favored Nation
MPI	Ministry of Planning and Investment
R&D	Research and Development
SMEs	Small and Medium Enterprises
SOEs	State-Owned Enterprises
TSLs	Two Stage Least Squares
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
USD	US dollar
WTO	World Trade Organization

INTRODUCTION

In nearly 20 years of *Doi Moi*, Vietnam has made a number of convincing socio-economic achievements. Average annual economic growth was 7.3 percent, and GDP per capita rose by 5.7 percent over the period 1990-2004. Meanwhile, poverty rate fell from roughly 80 percent in 1986 to around 29 percent in 2002. For the past decade, Vietnam has always been among the rapidly growing economies, with sharp poverty reduction, in the world.

Those promising achievements of the economic transition resulted from the reform policies that Vietnam has been undertaking in the context of rapid globalisation process. Since the late 1980s, Vietnam has advocated economic integration, beginning with the promulgation of the Law on Foreign Investment in 1987, and the signings of number of bilateral and multilateral trade agreements. Vietnam joined the ASEAN, APEC, and Asia-Europe Meeting (ASEM) in 1995, 1998 and 2001, respectively. The most recent and important agreement is the Vietnam-US Bilateral Trade Agreement. Currently Vietnam is negotiating in preparation for WTO accession.

In addition to more open trade policy, Vietnam has robustly improved the investment environment, particularly legal framework, to attract foreign direct investment (FDI). It has signed bilateral agreements on investment promotion and protection, which are more relaxing than current regulations as stipulated in the Law on Foreign Investment, with 45 countries and territories. Efforts by the Government to attract FDI inflows have produced encouraging results. By December 12, 2004, Vietnam has attracted 6,072 projects with the total registered capital of approximately USD49.2 billion. The foreign-invested sector has been recognized as an official part of the economy with increasing contribution to GDP, which was estimated to be roughly 14 percent in 2004. Besides, this sector also creates more employment, increases export turnover, helps to shift domestic economic structure, and raises revenue to the State Budget.

There, however, have been many comments that Vietnam has yet to entirely take advantages to attract more FDI inflow as well as to maximize its benefits. Such claim is made on the basis of fluctuating movements of FDI inflows, the modest proportion of

implemented FDI relative to registered FDI, the concentration of FDI in some industries and regions etc. Most FDI projects are small in scale, with moderate technology which originates mainly from Asia. In particular, Vietnam has yet to be a destination for investment by most multinational corporations with high technology and transfer of knowledge. This situation, together with increasing competition from China and other regional countries in attracting FDI inflows, are posing big challenges to Vietnam.

FDI may affect all economic, cultural and social aspects of the economy. However, for the developing countries, particular those poor countries, the key expectation of FDI is that it will facilitate economic growth. This anticipation is, according to economists and policy makers, due to three reasons. *Firstly*, FDI inflows help to increase the surplus of capital account, improving balance of payment and macroeconomic stability of the country. *Secondly*, the poor countries usually have low rates of capital accumulation and thus, FDI is regarded as a vital supplementary source of capital to support domestic investment, to achieve economic growth. *Thirdly*, FDI provides the poor countries with better access to modern technology, easier technology transfer, promotion of knowledge diffusion, improving managerial and labor skills, etc. The phenomenon, usually referred to as spillover effect of FDI, which contribute to the increase in labor productivity of domestic enterprises and ultimately to economic growth. In fact, not all countries succeed in fulfilling these three expectations simultaneously. Some countries have attracted substantial FDI inflows, but the spillover effects are almost non-existent. In another instance, FDI inflows to a country may increase its capital stock for investment, yet the contribution of this source of capital on growth is relatively low. These two cases present the policy failures in making efficient use of FDI. Hence, economists are paying more attention to the effects of FDI on growth, particularly in developing countries, via the two channels as mentioned above.

Based on those arguments and approach, this book only analyzes the effects of FDI on growth via the two most important channels – investment and spillover effects – rather than discussing *all* the possible effects of FDI on the economy. Within the limited scope of the publication, the authors focus on the spillover effects in three groups of processing industries – textiles and garment, food processing, mechanics and electronics. These three groups, with a key role in processing industries, have also attracted significant FDI inflows.

In the world, there have been numerous researches on the effects of FDI on economic growth. Such researches commonly employ quantitative methods to test and quantify those effects. In Vietnam, there is also existence of a number of researches on FDI in general, yet only a few of them examine the effects of FDI on economic growth deeply. For example, Nguyen Mai (2003), Freeman (2002), and Nguyen Thi Phuong Hoa (2001) are the comprehensive researches on FDI in Vietnam till 2002, with common findings that FDI positively affects economic growth via investment and human resource improvement. Spillover effects of FDI are also present in processing industries, due to labor movements and competition pressure. Meanwhile, Nguyen Thi Huong and Bui Huy Nhuong (2003) draw out some lessons to Vietnam from the comparing FDI policies in Vietnam and China from 1979 to 2002. Doan Ngoc Phuc (2003) analyzes FDI situation in the period 1988-2003 and concludes that economic growth in Vietnam largely depends upon the FDI sector.

Regarding the methodology, the majority of research on FDI in Vietnam employ qualitative methods and summarize FDI situation based on statistical data. The conclusions on effects of FDI on economic growth are mostly based on the proportion of FDI in gross national investment, the contribution of FDI sector to GDP or to the growth in value of the industry's production output. The paper by Nguyen Thi Phuong Hoa (2004) is one of the studies which apply both qualitative and quantitative methods. However, it only quantifies the effects of FDI on economic growth in Vietnam's provinces, to figure out the relationship between FDI and poverty reduction. Similarly, there has virtually been no quantitative research on the spillover effects of FDI. The absence of research using quantitative model can be attributed to data unavailability and/or data invalidity.

This book presents a research attempt to overcome such problem by using a broader approach, which combines all qualitative analysis using secondary and primary data and quantitative analysis. Without that combination, using single quantitative method may be difficult; it would produce misleading results due to insufficiency and low reliability of data that supposed to be used for quantitative analysis.

Beside the Introduction section, the report consists of 5 chapters. Chapter 1 presents an overview of FDI in Vietnam since 1988 and some preliminary remarks of the role of FDI in socio-economic development. This section also lists all remarkable changes in

Vietnam's policy to attract FDI in different periods and in contrast with those of countries in the region and in the world. Chapter 2 presents the theoretical framework that is a base to examine the FDI effects on economic growth via investment and spillover effects. This chapter begins with the review of findings in some research on such topic. It discusses in further details the theoretical background for the relationship between FDI and economic growth. On that basis, the report builds up a growth model to examine the growth effects of FDI via investment. This chapter also discusses the mechanisms of technology spillover effects, their transmission channels. Finally, it presents an analytical framework for those effects on the basis of some models in other countries. Chapter 3 provides the quantitative analysis of FDI effects on growth. Chapter 4 focuses on the determinants of labour productivity of the firms, the spillover effects of FDI on labour productivity of all domestic firms in general and of the firms in the three selected industries in particular. Chapter 4 also analyzes the results of the survey done by CIEM on 60 FDI enterprises and 33 domestic enterprises currently operating in processing industry. These statistics descriptions are supplementary to the subsequent quantitative analysis using other data source, and also be used to determine the existence of spillover effects as well as its transmission channels. At last, the Chapter presents a quantitative analysis using official data from Enterprise Survey in 2001 by General Statistic Office (GSO). Chapter 5 provides a summary of the main findings of the study. It then draws out some conclusions and policy recommendations to promote FDI inflows to Vietnam and to maximize the FDI inflow benefits.

This study is undertaken within the framework of SIDA-CIEM Project on "Capacity Building for Policy Research to Implement Vietnam's Socio-Economic Development Strategy in the period 2001-2010" by the Central Institute for Economic Management. The Research is undertaken within 10 months, from August 2004 to May 2005, including survey, process and collection of data for analysis.

The working team (coming from Department of Management Science-CIEM) would like to express sincere gratitude to the Department of Foreign Investment-MPI, the Department of Enterprises – MPI for their great assistance in undertaking the survey and comments on this study.

CHAPTER 1

FOREIGN DIRECT INVESTMENT IN VIETNAM SINCE 1988

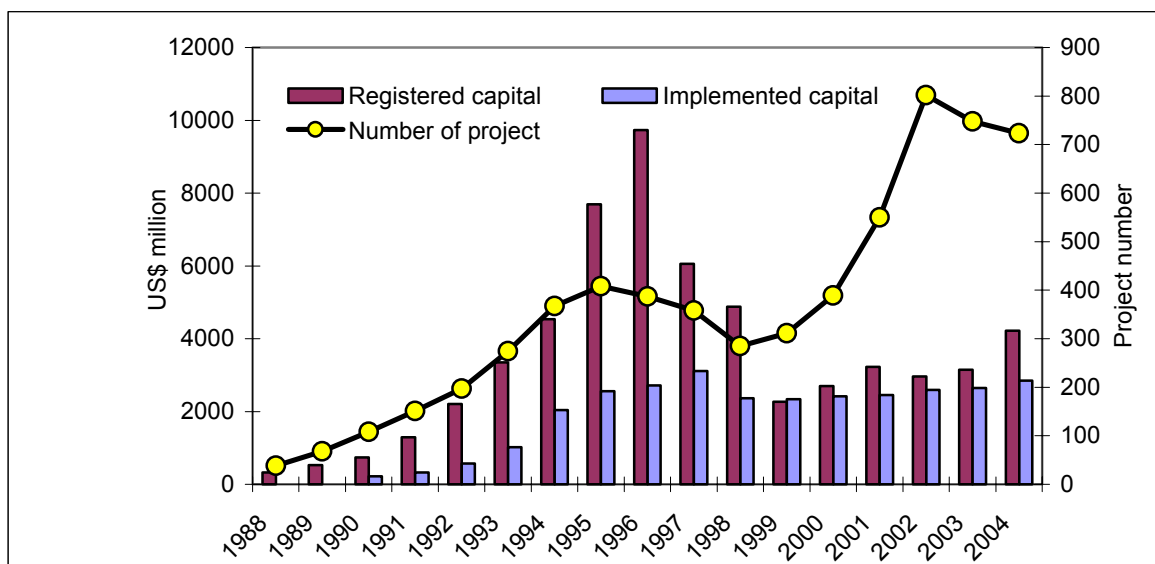
I. FOREIGN DIRECT INVESTMENT IN VIETNAM AND THE ROLE OF FOREIGN-INVESTED SECTOR IN THE ECONOMY

1.1. Overview of FDI inflows in Vietnam from 1988 to 2003¹

1.1.1 Periods of development

After the Law on Foreign Investment came into effect in 1987, Vietnam has achieved promising results in attracting FDI inflows. By December 31, 2004, Vietnam has attracted 6,164 FDI projects with the total registered and complementary² capital of approximately USD59.8 billion. A noteworthy point is that, by the end of 2004, the total implemented capital was around 50.1 percent of total registered and complementary amount of FDI projects. Nevertheless, Vietnam's annual FDI inflows have been rather changeable and unstable, especially since 1997 – after reaching a peak in 1996 (Chart 1).

Chart 1: Foreign Direct Investment in the period 1988 - 2004



Source: GSO (2004).

¹ Unless otherwise specified, the statistical data in this Section were taken from official source of GSO, Statistical Yearbooks from 2000 to 2004, and from GSO website: <http://www.gso.gov.vn>

² Including the contribution of Vietnamese enterprises. According to the GSO, such contribution tends to decrease relative to total registered capital; average Vietnamese contribution rate was 22.6 percent from 1988-1990, 28.1 percent from 1991 to 1995, 27.7 percent from 1996 to 2000, and roughly 8 percent from 2001 to 2004

The process of attracting FDI inflows to Vietnam over the last 15 years may be divided into 3 main periods, as follows:

From 1988 to 1996: FDI inflows to Vietnam increased continuously and rapidly in project number, and newly-registered capital which reached the peak of nearly USD8.9 billion in 1996. Such tendency resulted partly from foreign investors' expectations of a newly-opened economy, with the sizeable population of more than 70 millions and a highly potential consumer market. The characteristics of FDI inflow in this period is that implemented capital went up in absolute and relative terms comparing to registered capital however, the relative term was still very low. It is explained mainly by the arguments that this is the very beginning period of FDI inflows in Vietnam and that foreign investor just want to register their capital to invest rather than actual flow capital to Vietnam.

From 1997 to 1999: This period was characterized by the sharp fall in FDI inflows to Vietnam, mainly as a result of the Asian financial crisis and, the unattractiveness of Vietnam's investment environment³ relative to other countries in the region, especially to China. A possible explanation is that the Law on Foreign investment revised in 1996 took out some favors on foreign investor⁴. Newly licensed capital decreased on average at 24 percent per annum, while implemented capital went down more slowly, at 14 percent per annum on average, changing the ratios of registered and implemented capital. Since 1999, implemented capital has always exceeded registered capital.

From 2000 to 2003: There is a tendency for implemented capital to grow, albeit at a low rate, while the numbers of newly licensed projects and their capital have been relatively changeable. In 2002, the number of registered capital was at its minimum, despite the peak in number of projects, meaning that average size of capital per project was at a minimum.

From 2004 to mid-2005: total registered capital increased by 30% comparing to 2003 (for foreign contribution it increased by 28.4%). Total implemented capital, however,

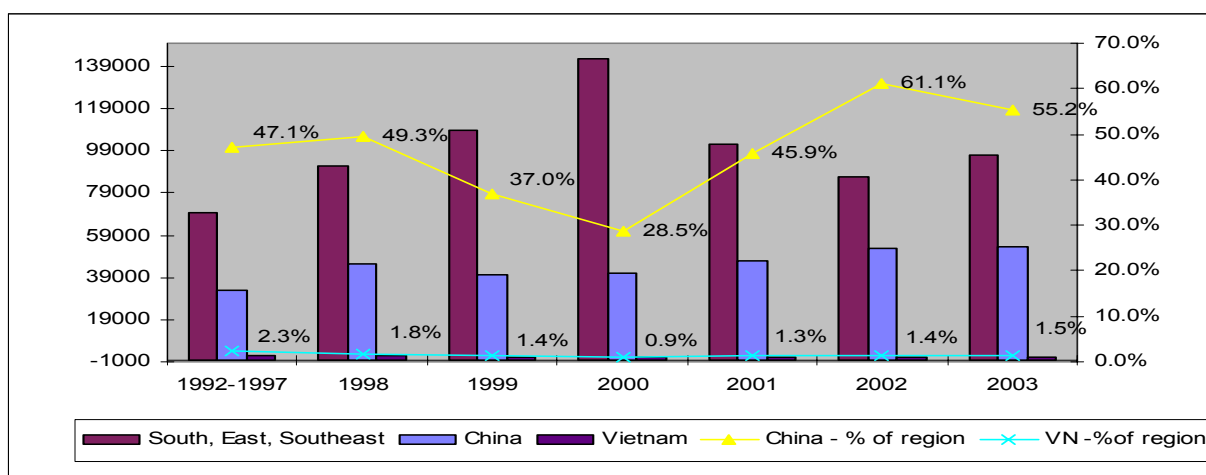
³ Investment environment is often used to describe institutional aspects that may affect enterprises' investment decisions and the implementation of investment. The investment environment is commonly evaluated based on the following indices: law and regulation, corruption, property rights, socio-economic infrastructure, financial services. Besides, others factors like bureaucracy, social and political instability, settlement of contract violation, etc. are also used for such evaluation (*Globalization, Growth and Poverty*, World Bank, 2002).

⁴ Can be seen in Table 1 of this report, however this explanation is debatable because comparing to domestic partner, foreign investors still enjoy more favours. The discrimination in investment may generate the unequal competitive environment between domestic and foreign investors

increased by only 7.6%. The high increase in FDI inflows in this period resulted partly from the improvement in investment environment provided by revising the Law on Foreign Investment⁵. In addition, the Government allowed foreign investor to indirectly invest to 35 industries and open some industries that monopolized by the government e.g. electric supply, insurance, banking, communication. The government also allows foreign-invested company to change to stock company. In 2004, Vietnam paid more attention on investment promotion inside and outside Vietnam.

After the Asian financial and monetary crises, countries in the region have considerably improved their investment environment to attract FDI. Similarly, since that landmark, Vietnam has also changed its FDI policies dramatically. However, there still exist numerous claims from foreign investors about the lack of transparency, consistency, and effectiveness of legal enforcement in Vietnam's law and regulations, despite of the positive changes. These factors increase transaction cost for investors and make Vietnam's investment environment become less attractive than previously, and less attractive than some countries in the region, especially China⁶ (Chart 2).

Chart 2: FDI inflows to Vietnam and China versus FDI inflows to South, East and South East Asia



Source: UNCTAD, *World Investment Report 2004*,

⁵ Business rights are also expanded such as the enterprise can freely select the project, Vietnamese partners, location, and the way of cooperation. The procedures for obtaining licenses are also simplified.

⁶ See: "Vietnam business environment in the vision of foreign investor", *Economic Review and Forecast Journal*, Vol. 1 (2004). pp. 18-19.

1.1.2. Some characteristics of FDI in Vietnam

Capital size per project: FDI projects in Vietnam are generally of small and medium scales. The average capital size in the period 1988-2003 was only USD8.3million. A noteworthy point is that, after reaching a peak of about USD23 million in 1996, the capital size per project⁷ has been reduced year by year down to about USD5 million in 2000 and USD2.5 million in 2003, before rising back to USD3.1 million in 2004. Besides, regarding about 500 biggest multinational corporations in the world, only 80 have established their presence in Vietnam, while in China, the corresponding number is 400⁸.

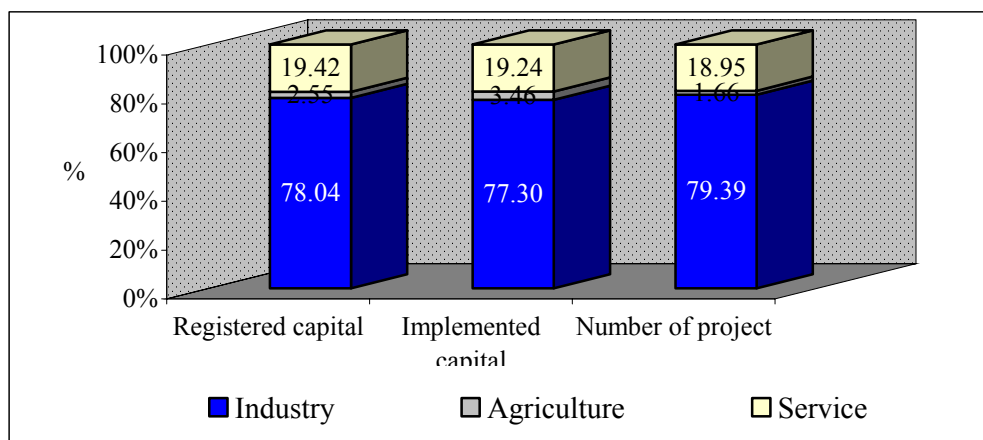
Form of ownership: Due to numerous reasons including the restriction of establishing wholly foreign enterprises, till mid 1990s, the FDI projects registered in Vietnam mainly took the form of joint venture between State-Owned Enterprises (SOEs) and foreign investors. By the end of 1998, joint venture enterprises have accounted for 59 percent of total number of projects and 69 percent of total registered capital. In 1997, the above restriction was removed, which has considerably affected the composition of FDI projects by forms of ownership. Since then, the share of joint ventures in total registered capital has fallen to 42.5 percent for current time and 45.5 percent for wholly foreign enterprise. BOT and business cooperation contract account for the remaining shares. In addition, the number of joint ventures between foreign investors and non-SOE firms also increases dramatically.

Investment composition by sector: FDI projects are mainly implemented in industrial sector, which considerably contributes to shifting economic structure toward industrialization. As depicted in Chart 3, by the end of 2004, FDI in industrial sector accounts for 79 percent of projects, 78 percent of total registered capital and 77.3 percent of total realized capital. Meanwhile, FDI in agriculture has been quite modest, in terms of number of projects, registered and implemented capital. A notable point is that, while FDI projects concentrate on mining and quarrying as well as import-substitution industries in the 1990s, the number of FDI in processing and export-oriented industries has risen up rapidly since 2000. This is a reason to explain the increase in Vietnam's total export turnover in recent years (MPI, 2003).

⁷ Ministry of Planning and Investment, *Chính sách đầu tư nước ngoài trong hội nhập kinh tế quốc tế*. Paper presented at international conference: "Viet Nam is ready to join the WTO", June 2003.

Investment location: Up to now, FDI projects have been present in 62 out of 64 cities and provinces of Vietnam. However, the composition of FDI projects by region has changed very slowly. The majority of FDI projects are located in urban areas and industrial zones, with favorable infrastructures, sizeable and skilled labor force. In 2004, Ho Chi Minh, Hanoi, Dong Nai and Binh Duong, attracted USD2.61 billion in total, accounting for 61.7 percent of total registered capital, and 65.5 percent of FDI projects in Vietnam. The implemented/registered capital ratio in these provinces reached 51.4 percent, which was higher than the country average. The other provinces just accounted for 38.3 percent of total registered capital of FDI. However, many provinces have actively and positively improved their investment environment, and some have been successful, such as those in the neighboring areas of Ha Noi and Ho Chi Minh cities.

Chart 3: FDI by sector in 2004



Source: GSO (2004).

FDI inflow by country: So far there have been 74 countries have FDI projects established in Vietnam, of which Singapore, Taiwan, Japan, Korea are major investors, with total shares of 63.3 percent of projects and 63 percent of total registered capital. There has virtually been no change in the composition of FDI by source country. Asian countries are still dominant in terms of project and registered capital, while European partners are only modest, being 16 percent of projects and 24 percent of registered capital. Investment from US, which has risen considerably after the signings of Vietnam – US Bilateral Trade

⁸ CIEM and UNDP, 'Chinh sach phat trien kinh te: kinh nghiem va bai hoc cua Trung Quoc', vol I. 2003. p. 194.

Agreement (2001), only make up 4 percent of projects and 2.7 percent of total registered capital⁹.

1.2. The role of FDI in Vietnam's economy

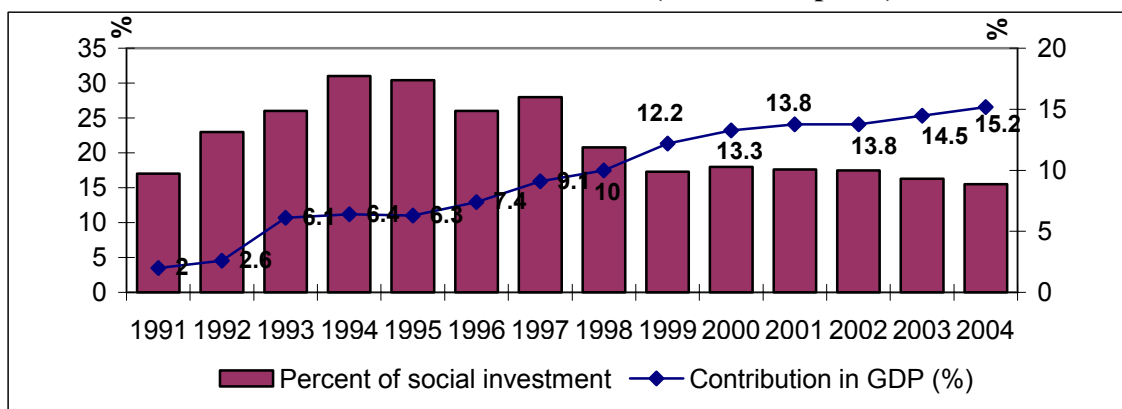
The foreign-invested sector is consolidating its important role in Vietnam's economy. FDI has been an important supplementary source of funds for gross national investment and improved the balance of payment for the past years. According to recent studies, such as Freeman (2000), MPI (2003), Nguyen Mai (2004), FDI sector is having an increasing share in GDP. This sector also helps to strengthen production capacity and technological innovation in a number of industries, international market penetration (in particular, increasing export turnover), raising revenues for the States budget and generating employment, etc. In addition, FDI enterprises enable technology transfer and their pressures require domestic firms to renovate their technologies, and to raise production efficiency. Managerial and working skills in FDI projects are also improved, which is a positive and effective channel for spillover effects. The section below will discuss the general role of FDI in the overall economy.

1.2.1. The role of FDI in national investment and economic growth

Vietnam pursued Economic Renovation (Doi Moi) program from a very low starting point. Therefore, FDI is an important supplement to domestic capital, so as to meet domestic investment demand. As depicted in Chart 4, the share of FDI in national investment has fluctuated considerably, because of up and down changes in FDI inflows on the one hand and changes in investment by domestic investor on the other hand. In the period 1994-1995, the share of FDI in gross national investment hit a record high level of 30 to 31 percent. After that, it gradually decreased and in 2005, implemented FDI only accounted for 15.5 percent of gross national investment (Chart 4).

⁹ Department of Foreign Investment, Ministry of Planning and Investment

Chart 4: Shares of implemented FDI in gross national investment and FDI sector in GDP (at current price)



Source: Statistical Yearbooks (2000 to 2004).

The share of FDI sector in GDP has been increasing over the last decade. In 2004, FDI sector accounted for 15.2 percent of GDP, higher than that of about 6.4 percent in 1994¹⁰. Besides, foreign-invested sector always has the most rapid growth, making it the most economically vibrant sector so far. The growth rate of this sector is always greater than the country average level¹¹.

1.2.2. The role of FDI in strengthening industrial production and export capacity

FDI projects to Vietnam are mainly implemented in industrial sector, as mentioned above. Hence, for the past decade, number industries such as oil and gas exploitation, telecommunication, electronics etc. have been established. In 2004, share of FDI sector in the total industrial output, at 1994 price, was 35.68 percent, showing a rise from that of 25.1 percent in 1995. This sector currently accounts for 100 percent output of some products such as oil and gas, automobiles, washing machines, air conditioners, refrigerators, computer peripherals; 60 percent of steel; 28 percent of cement; 33 percent of machinery, electric and electronic equipment; 76 percent of precision medical devices; 55 percent of fibers; 49 percent of shoe leathers; 25 percent of food and beverages¹², etc. In

¹⁰ See *Vietnam's Economy* (2000, 2003), Central Institute for Economic Management

¹¹ For example, in 2000, FDI sector's growth rate was 11.4 percent, compared with the country's growth rate of 6.8 percent; In 2001: the corresponding rates are 7.2 percent and 6.9 percent, respectively; In 2002: 8.0 percent and 7.04 percent, respectively; In 2003: 8.1 percent and 7.2 percent, respectively - See Table II.3, *Vietnam's Economy in 2003*, Central Institute for Economic Management, p.26.

¹² Ministry of Planning and Investment, *Chính sách đầu tư nước ngoài trong hội nhập kinh tế quốc tế*. Paper presented at international conference: "Vietnam is ready to join the WTO", June 2003.

particular, the growth rate of industrial output produced by FDI enterprises was always higher than that of the whole industrial sector in the period from 1995 to 2003 (except for the year 2001). However, in 2004, the growth of this sector is slower than the whole industrial sector, which is largely due to the rapid expansion of the domestic non-SOE sector.

Over the last decade, growth rate in export turnover of FDI sector has been higher than the country average. From 1991 to 2004, Vietnam's export turnover has increased more than 13 times, from USD2 billion to USD26.5 billion. The shares of FDI sector went up accordingly, from 4 to 54.6 percent, respectively¹³. It should be noted that, despite its export share, FDI sector only has modest net export values. This is because FDI projects in industrial sector mainly employ small-scale assembly lines and the majority of their inputs come from imports.

1.2.3. The role of FDI in employment and human resources

Recently, FDI projects in Vietnam currently employ 730,000 labors, accounting for only 1.5 percent of total labors in Vietnam, though higher than it was in 1996 (0.7 percent). The underlying reason is that the presence of FDI is mainly in capital intensive industries which use highly skilled labors. This may also explain why the wage level in FDI sectors is, on average, twice as large as that paid by domestic enterprise in the same industry¹⁴. More importantly, these labors are able to access to advanced technology, with good working disciplines, and modern working methods. In particular, some Vietnamese specialists become gradually capable of taking over the management of firms and modern technology lines¹⁵.

FDI also indirectly creates many jobs in service sector and those have close linkages with FDI enterprise through providing raw materials, intermediate products etc. However, official statistics on the employment indirectly created by FDI sector in Vietnam through backward and forward linkages are still unavailable.

¹³ Including crude oil.

¹⁴ For instance, the average wage of labour in FDI sector is approximately 75-80 (USD/month), the wage of an engineer is about 220-250 (USD/month) and for an administrative officer, the wage is from 490-510(USD/month) – Source: Ministry of Planning and Investment

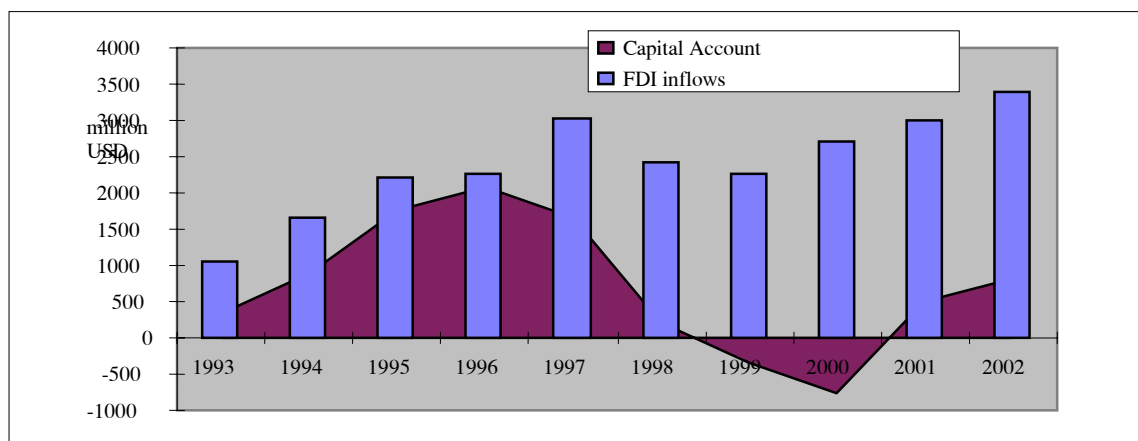
¹⁵ Up to now, there has been no comprehensive research with specific numbers to support this view. Nonetheless, there has been some sparse proof in some enterprises and in official forums held in Vietnam.

1.2.4. The role of FDI in State budget revenues and macroeconomic stabilization

FDI sector is becoming increasingly significance in raising revenues for the State budget. According to General Department of Tax, the State revenue from FDI sector in 2002 was approximately USD480 million, which was 4.2 times larger than that in 1994. In the period 1996-2002, the share of (direct) revenues from this sector in State Budget was approximately 6 percent on average¹⁶. This relatively small share resulted from Government policy to encourage investment via deduction of corporate income tax in early years. Nevertheless, the share would be around 20 percent if the tax revenue from crude oil is included.

Additionally, FDI is important in that it increases capital account surplus, thereby improving the overall balance of payments. Capital account from 1994 to 2002 indicates a relationship between capital account balance and annual FDI inflows to Vietnam (Chart 5).

Chart 5: Capital account balance and FDI inflows to Vietnam, 1993-2002



Source: State Bank of Vietnam, *Vietnam's Economy in 2002*

II. OVERVIEW OF POLICY TO ATTRACT FDI INFLOWS

2.1. Policy framework of FDI attraction

Vietnam has implemented policies to attract FDI as soon as the country began its economic reform. Such policies have been institutionalized via the promulgation of Law on Foreign Investment in 1987. So far, the Law has been revised 4 times, in the years 1990,

1992, 1996 and 2000. Table 1 summarizes the most key changes in FDI policy over time in accordance with each revision. It shows that, in general, Vietnam tends to increase rights of foreign investors, to make investment environment more favorable, and narrow the policy gap between foreign and domestic investor. These reflect the Government's efforts in creating single investment environment in accordance with Vietnam's integration process¹⁷.

The changes in the policy for FDI sector come from various reasons. Along with the performance of FDI sector, those changes for the last 17 years were also derived from three other factors, namely: (1) changes in awareness and viewpoint of the Communist Party and the Government toward foreign economic sector; (2) competition pressures from other countries in the region, and in the world, with respect to FDI attraction; and (3) Vietnam's international commitments regarding foreign investment. The section below will discuss these factors, and indicate some challenges to the Government of Vietnam in improving FDI policies and regulations in the forthcoming years.

Table 1: Key changes in FDI policies in each revised Law on Foreign Investment in Vietnam

<i>Policy areas</i>	<i>Revised Law in 1992</i>	<i>Revised Law in 1996</i>	<i>Revised Law in 2000</i>
Registration procedures	+ FDI license shall be granted within 45 days + After being licensed, FDI enterprises still have to register their business	+ FDI enterprises are allowed to choose forms of investment, rate of capital contribution, investment location and Vietnamese partner + Enterprises with export proportion of more than 80 percent are given priority in granting license	+ Publishing the list of FDI enterprises which are permitted to make business registration, without FDI license. + Removing registration related fees

¹⁶ Excluding the revenues from crude oil, and comprising of direct taxes from foreign-invested enterprises.

¹⁷ See "Moi truong dau tu tai Viet Nam qua goc nhin cua nha dau tu nuoc ngoai", by Le The Gioi, Journal of Economics and Forecast, vol 1, 2004.

<i>Policy areas</i>	<i>Revised Law in 1992</i>	<i>Revised Law in 1996</i>	<i>Revised Law in 2000</i>
Decentralizing registration/licensing process Areas	+ Encouraging joint venture with domestic enterprises; restriction of enterprises with 100 percent foreign-owned capital	+ Encouraging FDI enterprise with export-oriented and hi-tech industries	+ Publishing the list of projects calling for foreign investment in the period 2001-2005 + Expanding areas for foreign investment, allow FDI in housing construction; + Diversifying the investment form; Allowing foreigner to buy stocks of domestic enterprises
Land	+ Vietnam is responsible for compensation, site clearance for foreign-invested projects + FDI projects may rent land for operation, but are not permitted to re-renting land	+ Local People's Committee shall help foreign enterprise to clear the site when the project is approved; The enterprises shall make payment for site clearance to the People's Committee + The FDI enterprises may rent out the land in industrial zones, export processing zones to other firms	+ May use the construction attached to land and value of land use right as collateral for borrowing loan
Policies on Exchange rate, foreign currency	+ the Government shall guarantee foreign currency balance to FDI projects in infrastructure facilities and import substitution + FDI enterprises in other areas shall have to arrange foreign exchange balance themselves; the State shall not be responsible for foreign exchange balance in	+ Self guarantee of foreign currency balance + Apply the restriction of international remittance (80 percent) due to regional crisis, and then gradually release this rate. + The enterprises may purchase foreign currency from commercial banks with the	+ May purchase foreign currency from commercial banks to meet transaction demand, in accordance with the law; + Not requiring approval on capital transfer; Reducing the fee on profit remittance

<i>Policy areas</i>	<i>Revised Law in 1992</i>	<i>Revised Law in 1996</i>	<i>Revised Law in 2000</i>
	such projects.	permission from the State Bank	abroad. + Reducing the rate of international remittance from 80 percent to 50 percent, 30 percent and 0 percent
Policies on import, export	+ Foreign firms must ensure export proportion as declared in investment license; + The products of FDI enterprises must not be sold in Vietnam via dealers + FDI enterprises must not act as dealers for imports - exports	+ Entirely removing the regulation that the export plan of enterprise must approved by authorities; + Improving import-export procedures with regard to certification of origins	+ Reducing number of areas with require for export proportion of 80 percent; + FDI enterprises may act as dealers for imports - export services
Tax policies	+ Preferential tax for FDI in areas with given priority: corporate income tax of 10 percent within 15 years of commencement of operation; + The regulation on the income tax on whole foreign enterprise does not allow the deduction of profit in later years to compensate for the loss in previous years; + The FDI enterprises must exclude some cost items from production costs; + import duties are calculated based on the low import price applied for calculating tax;	+ Exemption of import duties on machinery, equipment, specialized means of transports, raw materials, etc. for production and business of FDI enterprises; + Exemption of import duties for projects in prioritized industries, regions within 5 years of commencement of operation; + FDI enterprise those have export can get tax exemption while import raw materials for their production; + The firms supplying inputs to export enterprises are exempted from import tax on raw materials, intermediate goods with corresponding proportions;	+ Removing regulation that the FDI enterprise has to allocate their certain profit proportion to reserve fund; + Further reform the tax system; gradually reduce the tax gap between domestic and foreign investment

Source: Researchers' compilations.

2.2. Changes in Vietnam's awareness and view point on FDI

There has been a number of changes so far in the views of the Communist Party and the Government on foreign economic in general and FDI in particular. This resulted from the actual situation of the economy, as well as the changes in regional and world economic settings. In fact, FDI enterprises were not considered as an independent entity before 2000. However, the IX Party Congress in 2001 marked an important change when FDI sector was officially recognized as one of the six sectors in the economy. The landmarks of significant changes in awareness and views of the Party and the Government of Vietnam, with respect to the role of FDI in the economy, are as follows.

The VII and VIII Party Congress, in 1991 and 1996, respectively, have recognized the cooperation and joint venture between State enterprise and foreign partner, and affirmed that FDI sector *“has a vital role in the mobilization of capital, technology, organizational and managerial skills...”*¹⁸, though they were yet to separate the FDI into an “economic sector” in Vietnam's multisectoral economy. From that viewpoint, the policies regarding FDI mainly focused on encouraging joint ventures between foreign investors and Vietnam's SOEs, with operations in a number of economic industries, except for areas of particular importance to the national economy, security and defense.

The year 2001 marked the first time the sector with foreign capital was recognized as an economic sector. Its contribution was emphasized as *“export orientation, construction of socio-economic infrastructure facilities, as well as transfer of advance technology and creation of additional employment, etc.”*¹⁹ Because of that great contribution, at the 9th Central Party Congress, the Communist Party of Vietnam had put forward the task of *“generating fundamental changes in attracting foreign direct investment”*²⁰. Accordingly, FDI policy in the forthcoming years will focus on raising the quality of FDI inflows to Vietnam, by further attraction of FDI from multinationals involving with important industries and sectors of the economy, particularly industries that use hi-tech or source technology. The positive changes in awareness and viewpoint of the Party and the State become an essential foundation for the Government's amendment and

¹⁸ Document of the 8th National Party Congress, 1996.

¹⁹ Document of the 9th National Party Congress, 2001.

improvement of legal documents and policy framework with respect to FDI attraction and operations of FDI enterprises in recent years.

2.3. Comparing current FDI policies in Vietnam and some countries

As presented in Table 1, Vietnam's FDI policy has now been more relaxing, and more favorable to foreign investors than previously. Table 2 compares some key policies regarding preferential treatment to foreign investors in some countries in the region and transition economies. Some remarks may be drawn accordingly, as follows:

Firstly, in principle, Vietnam's priorities given to foreign investors are relatively competitive compared to some countries (as in Table 2) in investment form, licensing procedures. Nevertheless, in comparison with some transition economies and regional countries like Poland, Hungary, Czech Republic, Thailand, Philippines, Indonesia, such preferential treatment is still weak.

Secondly, relative to other countries in the region as well as transition economies, foreign investors still encounter certain difficulties in Vietnam, particularly those related to land, site clearance to carry out the project after they receive the license (except when they are located in industrial zones, export processing zones). In many instances, as a result of these problems, it may take longer to prepare and construct necessary facilities, delaying the commencement of projects and the investors may miss the business opportunities.

Thirdly, underdevelopment of banking sector, unconverted currency, monetary policy as well as regulations on foreign exchange management are currently unfavorable to the investors, and less competitive than countries in the region and transition economies.

Fourthly, compared with the situation in a decade ago, the conditions regarding Vietnam's investment environment have become more favorable to foreign investors in Vietnam. Nonetheless, the legal system and policies related to FDI still lack consistency, transparency, predictability, and have been rather changeable. A recent survey on FDI enterprises in Vietnam²¹ indicates that Vietnam's current FDI policy is still causing unreasonable barriers and difficulties to investors. Specifically, restricting areas of operations, expanding the list of business with required conditions, imposing export proportion on FDI enterprises, raising the land price and compensation of site clearance

²⁰ Material at the 9th National Meeting (term 9) of Communist Party of Vietnam, 2004.

are the sources to increasing instability in Vietnam's FDI policy. This also proves the weak competitiveness relative to other countries.

Table 2: Comparing key FDI policies in Vietnam and some regional and transition countries

Country name	Restriction on the form of enterprises and areas	Regulation on the granting license	Access to Land	Exchange rate and foreign exchange
Vietnam	The enterprises are permitted to choose investment form; wholly foreign enterprise are allowed, except for some important and sensitive industries; The FDI enterprises may be converted to joint stock companies, and free to choose investment partners	Investment in some industries only need to register with authority while others still have to obtain the investment license; Issuing license for small and medium projects is decentralized to the local government, and management board of industrial zones;	Land ownership is not permitted; allowing renting land in industrial zones or business premise; transfer and mortgage of land use right is permitted	Controlling current account; imposing fees/tax on the transfer of money abroad; permission is required for money transfer abroad.
China	Wholly foreign enterprises must ask for license, and can operating only in export –oriented industries; some industries require minimum proportion of domestic investment; FDI enterprises may convert investment	Investment license required; licensing for small and medium projects is decentralized to the local government	Ownership on land and house is permitted; some difficulties for investors in terms of site, land; transfer and mortgage of land use rights are permitted	No limit on transfer of foreign currency; current account is still under control; permission is required in transfer money abroad.

²¹ See “Moi truong dau tu tai Viet Nam qua goc nhin cua nha dau tu nuoc ngoai”, Le The Gioi, Journal of Economics and Forecast, vol 1, 2004.

Country name	Restriction on the form of enterprises and areas	Regulation on the granting license	Access to Land	Exchange rate and foreign exchange
Philippines	form, and are free to choose investment partners Wholly foreign enterprise is permitted operating in many industries; restriction on maximum capital contribution of FDI in some industries; investors are free to choose investment partners.	License is required only if the project want to enjoy preferential policy (within 3 weeks); otherwise the investment procedures are similar to domestic investors (only require registration).	Enterprises with more than 40 percent foreign owned capital are not permitted to own land; they have to lease from real estate agent. Other enterprise may lease land for 50 years; transfer and mortgage of land use rights are permitted	Flexible foreign exchange management; no restrictions on loans in foreign currencies and transfer of foreign currencies abroad; No requirement on mandatory foreign exchange reserves in the enterprises' account.
Thailand	No restriction of FDI, and enterprises are permitted to choose investment form, except for some restricted industries	License only required if the project want to enjoy preferential investment policy. The investors only have to register with the Ministry of Commerce and Department of Tax.	Enterprises may lease land for 50 years, with automatic extension when expire; the land leasing contract may be used to mortgage.	Flexible foreign exchange, no restriction on loans, transfer or reserve of foreign currencies.
South Korea	Very strict initially, but now changed. Basically no restriction on FDI except for some "sensitive industries". Investors may own up to	Complicated procedures; has been improved much after the regional crisis.	Enterprises may lease land for 50 years; land mortgage is allowed; however, domestic firms still have better access to	Flexible foreign exchange, no restriction on loans, transfer or reserve of foreign currencies.

Country name	Restriction on the form of enterprises and areas	Regulation on the granting license	Access to Land	Exchange rate and foreign exchange
	33 percent of SOE capital; free to choose investment partners		land	
Indonesia	Prohibition of wholly foreign enterprises in some sensitive industries. For the rest, foreign investors are free to choose investment form.	Complicated procedures; prevalent corruption in investment licensing; Approval of President is required if the project capital is greater than USD100 million; a number of licenses required even after being granted investment license;	Leasing land in industrial zones is permitted, but not easy in reality; land lease for 30 years is most popular. Transfer, mortgage of land use rights are permitted.	No significant restrictions in foreign exchange policy.
Malaysia	Enterprises with 100 percent foreign owned capital only permitted in export- oriented sectors, while restricted in others	License is required for all FDI projects (granted within 6-8 weeks, may be longer for some projects).	FDI enterprises may choose to lease or buy land in 99 years; mortgage, transfer of land is permitted.	Tax levied on transfer of money abroad after financial crisis,
Hungary	No restriction on the form of investment and the type of FDI enterprises	No license required, except for a few areas	Land purchase and land ownership permitted	Flexible foreign exchange regime, converted currency
Poland	No restriction on the form of investment and the type of FDI enterprises	No license required, except for a few areas	Land purchase and land ownership permitted; however it requires the permission.	Flexible foreign exchange regime, converted currency

Country name	Restriction on the form of enterprises and areas	Regulation on the granting license	Access to Land	Exchange rate and foreign exchange
Czech Republic	No restriction on the form of investment and the type of FDI enterprises	No license required, except for a few areas	Land purchase and ownership permitted	Flexible foreign exchange regime, converted currency

Source: Authors' compilations from various sources: "Vietnam Attracting More and Better FDI", FIAS IFC at the World Bank, 1999 for countries other than Vietnam and China; *Chinh sach phat trien kinh te: Kinh nghiem va bai hoc tu Trung Quoc*, Central Institute for Economic Management, 2003 for China; and Table 1 for Vietnam.

In addition, the effectiveness of law enforcement in Vietnam is still low, which results in a gap between policy and practical execution. The effectiveness of FDI attraction is also reduced by other factors, such as: poor infrastructure facilities and business support. These push up the cost of doing business - for example, the fee for telecommunication services, electricity, administrative procedures - in Vietnam. These factors also influence the international competitiveness of products from FDI enterprises. In 2003, when comparing production costs of Japanese enterprises in a number of cities and countries, the Annual Report by JETRO indicated that some services in Vietnam, like shipping, international communication, space leasing, electricity for production²², still cost more than other countries. For instance, the fees for a three-minute call to Japan from HoChiMinh and HaNoi cities is currently 2.5 times as large as that from China's cities, 3.5 times as large as that from Seoul (South Korea) and Bangkok (Thailand), 4 times as large as that from Kuala Lumpur (Malaysia), 5 times as large as that from Singapore, etc²³.

2.4. Vietnam's international commitment on foreign investment

Together with the establishment and gradual improvement of the legal system, policies on foreign investment, Vietnam has also signed some international bilateral and multilateral agreements on foreign investment. This is indispensable in Vietnam's international economic integration and in overall policy on investment encouragement and protection.

²² See "The 13th Survey of Investment – Related Cost Comparision In Major Cities and Regions in Asia", Overseas Research Department, JETRO, March 2003.

²³ Previously cited material, p.17.

Vietnam has had bilateral agreements on investment encouragement and protection with 45 countries and territories so far. Those agreements have wider scope of adjustment than that of current regulation as stipulated in Vietnam's Law on Foreign Investment. For example, these agreements specify the terms regarding various forms of investment: direct, indirect, contract rights, tangible and intangible assets, property rights, and other rights as stipulated in the laws. Nonetheless, at the time of this study, Vietnam has only committed to the most-favored-nation (MFN) treatment as well as committed to encourage and protect investment in accordance with common standard and practices²⁴.

Vietnam has also participated, since 1995, in some international agreements and forums such as: i) Framework Agreement on the ASEAN Investment Area (AIA); ii) Asia Pacific Economic Cooperation forum (APEC) with the action plan to liberalize investment in the region; iii) Asia – European Summit, which includes the implementation of Investment Promotion Action Plan (IPAP). In particular, Vietnam is currently in the negotiation to become an official member of the World Trade Organization (WTO). The commitment with regard to the Trade-Related Investment Measures (TRIMS) will become an indispensable requirement in that negotiation process.

The above analysis shows that, to further promote international economic integration, Vietnam needs to improve current legal system with respect to investment, so as to be conformable to the international investment treaties and agreements, in which Vietnam is a signatory.

²⁴ These are, for example, guarantee of principles of fairness, non-discriminatory treatment; undertaking investment protection measures such as no confiscation or requisition of assets; guarantee of right to remit funds, profits and other legitimate income of the investors to their home countries; guarantee of investors' right to have the dispute with government agency settled by referees or administrative court, etc. For further detail, see "*Chinh sach dau tu nuoc ngoai trong tien trinh Hoi nhap kinh te quoc te*", presented at the conference: "Vietnam is ready to join the WTO", Ministry of Planning and Investment, June 2003.

CHAPTER 2

ANALYTICAL FRAMEWORK

I. THEORETICAL BACKGROUND OF EFFECTS OF FDI ON ECONOMIC GROWTH

1.1. Effects of FDI

FDI may affect economic growth in a number of ways. From a narrow perspective, the effect of FDI on growth is direct via investment channel and indirect via spillover effects. In a broader approach, FDI puts pressure on the host countries to improve their competitiveness, particularly investment environment, thereby reducing transaction costs to foreign investors, increasing return to capital, and ultimately fostering economic growth. FDI inflow may also be argued to increase investment of domestic firms, especially those suppliers of inputs to FDI enterprises or those using inputs from FDI enterprises. In this respect, FDI positively affects domestic investment. Simultaneously, policies to improve infrastructure facilities, to attract more FDI, are also significant in promoting the establishment and development of domestic enterprises.

On the contrary, there is also a concern that FDI inflow may negatively affect economic growth. The reason for such concern is that competition from FDI enterprises is arguably fierce, and domestic firms are very likely to lose. In such instance, domestic firms may have difficulty in maintaining market shares, skilled labours, and even go bankrupt. Besides, FDI may reduce domestic investment as a number of domestic firms lose opportunities or invest inefficiently due to outdated technology and/or lack of capital. This happens when there exists a crowding-out, rather than complementary, effect of FDI enterprises in investment.

This research concentrates only on direct effect of FDI on economic growth in the narrow approach, based upon the analytical framework used in many works. The direct effects of FDI on growth are usually channeled via investment and can be estimated using growth model at the macro-level. Conversely, the indirect effect created by the spillover effect may or may not be present, at both macro- and micro- levels. The assessment of

spillover at the micro-level is more useful for policy makers in practice, and hence, attracts more interest. At the micro- or firm level, such assessment requires, at least, determination of channels of effects, and evaluation of those effects. The next section will discuss in further details the methodology to assess the effects of FDI, via investment at the macro level and via spillover effects at the micro level, on economic growth.

1.2. Theoretical framework of impact of FDI on growth through investment

So as to examine the relationship between FDI and economic growth, and to assess its effects, this paper will present a theoretical framework using endogenous growth model²⁵. In this model, Y is the final output of the economy, which is produced with general production technology with inputs being physical capital K and human capital H ²⁶:

$$Y(t) = A(t)f(K(t), H(t))$$

Assuming that technological progress, denoted by $A(t)$, grows at a constant rate of a or $A(t) = A(0)e^{at}$ where $A(0)$ is the technology level at time 0). With production function as assumed above, then technology level A will positively affect both input $K(t)$ and $H(t)$. Consequently, technological progress will indirectly affect the output level $Y(t)$. We assume further that the economy consists of one representative household²⁷, which produces output $Y(t)$. The household spends a proportion of the income on consumption $C(t)$ and saves the rest for investment. Its utility function features decreasing marginal utility of consumption²⁸:

$$(1) \text{ Max } \left(U(t) = \int_0^{\infty} \frac{C_t^{1-\theta} - 1}{1-\theta} e^{-\rho t} dt \right) \text{ where } \theta, \rho > 0; \theta \neq 1 \text{ and } C(t) \begin{cases} \infty \\ t=0 \end{cases}$$

²⁵ This section presents a general theoretical model based on various reference materials. For a more specific theoretical model, using Cobb-Douglas production function, see Borensztein *et al.* (1995).

²⁶ To be brief, let K denote the stock of physical capital. In growth and growth model analysis, K is essentially capital asset, which is formed in the investment and accumulation processes, such as machinery, factories, etc. On the other hand, human capital has been used in a number of growth theories and models, and is defined in various ways. In general, human capital can be regarded as the human capacity used in the production process to achieve higher economic productivity. Hence, human capital is the outcome of investment and accumulation processes, and is accordingly called human capital assets. Investment in education, training and health will help to increase human capital stock.

²⁷ In practices, there are a huge number of heterogeneous households in the economy. However, to simplify the model and focus on the main point of this Research, homogeneity of the households is assumed. Besides, the price of output Y is standardized and valued at 1.

²⁸ This assumption is reasonable, since the increase in utility from consuming an additional unit of good tends to fall. This concept is, in fundamental, no different from marginal product or marginal cost. In equation (1), $U(t)$ is utility function, $C(t)$ is consumption expenditure, θ is the consumption elasticity of marginal utility and is a

To maximize the utility within the income constraint, household consumption is determined by the following²⁹ relationship in equation (2), where g_c denotes the growth rate of consumption, r^* denotes the market interest rate when the economy is in steady state of growth:

$$(2) \quad g_c = \frac{1}{\theta}(r^* - \rho)$$

As the economy is in steady state of growth, the growth rate of consumption must be equal to that of final output, denoted by g_y , of the whole economy, or:

$$(3) \quad g_y = g_c = \frac{1}{\theta}(r^* - \rho)$$

To focus on effect of FDI on growth, this section assumes that the stock of human capital is given, while the stock of physical capital is equal to total values of capital goods produced in the economy. Therefore, physical capital stock at time t is formed via the increase in capital goods of the economy at that point in time, and is described in the following equation:

$$(4) \quad K(t) = \int_0^N x_i(i) d(i) \text{ where } x(i) > 0; K(t) > 0; N \in [0, \infty]$$

In equation (4), $K(t)$ is the stock of physical capital of the economy, $x(i)$ represents the i^{th} capital good, and N denotes the number of capital goods in the economy. If a , b represent the numbers of capital goods produced by domestic firms and foreign-invested firms, respectively, then N is the sum of a and b ($N=a + b$). Assume that some firms specialize in producing capital goods, and then rent out to other firms to produce final output at the price of $z(i)$. Due to competitive market for final output, as well as perfect factor markets, the equilibrium condition between the rental price of capital goods and marginal product of capital must be equalized; that is:

$$(5) \quad z(i) = \partial Y(K, H) / \partial K$$

constant; ρ is the rate of time preference; Higher ρ implies that the consumer values current consumption more than future consumption and vice versa.

²⁹ The solution to optimization problem in endogenous growth model is discussed in further details in various materials, such as “*Economic Growth*” by Barro, R. and Sala-i-Martin, X. (Cambridge, MA: McGraw-Hill, 1994). Note that the optimal solution to utility level exists only if $\rho > (1 - \theta)g_c$ is satisfied.

From (4) and (5), it can be seen that $z(i)$ is also dependent upon demand for the i^{th} capital good, or $x(i)$. For developing countries, the shortest way to produce a new type of capital good is to apply modern technology, which is transferred via FDI from foreign and particularly multinational corporations. However, they only undertake foreign investment if the key infrastructure facilities in receiving country are satisfactory. In other words, a certain amount of fixed costs is required for foreign investment and production of capital goods, and these costs are inversely proportional to the number of capital goods produced by the FDI enterprises.

The above argument also implies that, for a poor country, production of existing capital goods³⁰ is cheaper than that of a capital good which is entirely new to the world market. Besides, the initial fixed costs required for the diffusion of technological progress also depends upon the gaps between quantity and quality of the domestically produced capital goods and those produced abroad. These gaps are usually proportional to the fixed costs of applying technology. That is, such costs will be higher in those countries who produce fewer capital goods, or the costs to improve a capital good with more knowledge content is higher than those with less knowledge content. Therefore, if there are catch-up effects in technology, the fixed costs of applying technology via foreign firms fall when the number of domestically produced capital goods goes up.

If the number of capital goods produced in the world is N^* , and fixed costs is F , then the relationship between fixed costs, the number of capital goods produced by foreign firms in receiving country (b) and the ratio of domestically and foreign produced capital goods (N/N^*) can be described in a simple way as follows;

$$(6) \quad F = F(b, N / N^*) \text{ where } \partial F / \partial b < 0 \text{ and } \partial F / \partial (N / N^*) < 0$$

Apart from the fixed costs, FDI enterprises also incur variables costs and the opportunity cost of this fund - interest rate r - in order to produce capital goods. For simplicity, assume that average variable cost remains constant, i.e. marginal cost is equal

³⁰ It may be understood that these capital goods are old in a more advanced countries, yet are new to local country.

to 1, and the interest rate at steady state of growth is unchanged³¹. The problem for FDI enterprises is to maximize the profit³²:

$$(7) \quad \Pi(i, t) = \int_t^{\infty} (z(i) * x(i) - x(i)) e^{-r(s-t)} ds - F(b, N / N^*)$$

If perfectly competitive market for capital goods is assumed, then replacing $z(i)$ from equation (5) to (7) and solving the conditions for maximizing profits³³ will produce the demand for i^{th} capital good in equilibrium. After that, $x^*(i)$ can be substituted back into (5) to arrive at the rental price of i^{th} capital good at the equilibrium. In perfectly competitive market with free market entry, the opportunity cost of loans will be at the level where total revenues offset the total costs³⁴. Hence, the equilibrium interest rate can be calculated as:

$$(8) \quad r^* = \Omega(F(b, N / N^*))^{-1} \text{ where } \Omega = x^*(i)(m^*(i) - 1)$$

Assuming that Y is gross domestic product (GDP), equation (8) can be substituted into (3) to arrive at the rate of economic growth:

$$(9) \quad g_Y = g_{GDP} = \frac{1}{\theta} [\Omega(F(b, N / N^*))^{-1} - \rho]$$

An implication from this model is that economic growth is determined by various factors. However, the most significant inference from the model is the existence of a direct relationship between FDI and economic growth. Via FDI, new capital goods are created – which increases the stock of physical capital in the economy – at lower production costs. Consequently, economic growth is positively affected. Besides, the growth rate is also inversely proportional to the gap in technology between host and home countries of FDI flow. In this Research, such gap is measured by the ratio of new domestically produced capital goods and those produced in home countries. These impacts of FDI explain why poorer country may catch up with the richer one in terms of economic growth, and why all

³¹ This is a necessary condition for the existence of steady state of growth. This condition is expressed in mathematical terms as $\partial r / \partial t = 0$.

³² The second term on the right hand side expression of (7) is fixed costs. The first one represents the total revenue from one unit of capital good after subtracting variable costs, then discounted at the interest rate.

³³ The necessary condition for profit maximizing is that the quantity is chosen so as to equalize marginal revenue and marginal cost. This condition may be represented as . This can be solved to get the equilibrium quantity of i^{th} good, .

³⁴ That is, the condition $\Pi(i, t) = 0$ must be satisfied.

countries, especially the poor countries, make huge efforts to attract FDI inflows. The model in (9), hence, provides a theoretical background to examine the effects of FDI on economic growth at the macro level.

The determinants of FDI attraction and implementation also attract considerable research interests due to the important effects of FDI on economic growth in developing countries. This issue will be discussed in further details in the quantitative analysis, to add to the sole objective of the Research.

1.3. Theoretical framework to assess the spillover effects of FDI

1.3.1. Mechanism of spillovers

Apart from affecting economic growth directly, the presence of FDI enterprises also has indirect effects on domestic firms. For instance, FDI enterprises may exert competition pressures on domestic counterparts so that the latter have to improve business efficiency, or they may promote the diffusion and transfer of technology, etc. These are also called the “spillover effects” of FDI. A possible reason for the presence of spillover effects is the gap between foreign and domestic firms, with the former group having advantages in capital and technology. Hence, the subsidiary companies or joint ventures, established by multinational corporations, tend to have competitive advantage over domestic enterprises, particularly in developing countries. In such instance, the presence of foreign enterprises creates market disturbance and domestic firms have to adjust their behavior accordingly so as to maintain market shares and profits. The spillover effect may therefore be regarded as the outcome from foreign firms’ activities and the simultaneous adjustment of domestic firms’ behavior.

The spillover effects may be broken down into four categories: (1) effects related to input-output structure of the firms³⁵; (2) effects related to technology diffusion and transfer³⁶; (3) effects related to domestic market shares³⁷; and (4) effects related to labor skills, or human capital. All these effects may affect productivity level of domestic firms. As the values added in the economy are mainly created by the enterprises, it is possible to figure out an indirect relationship between growth and FDI spillover effects.

³⁵ Backward-forward effects

³⁶ Demonstration effect.

³⁷ Competition effect.

The first type of spillover effects occur when there is exchange and/or business relationship regarding raw materials or intermediate products between FDI enterprises and domestic ones. This can be either forward effect, when domestic firms purchase intermediate products from FDI enterprises, or backward effect, when domestic firms supply inputs to FDI enterprises. In the latter case, FDI enterprises will induce the domestic counterparts to expand their production and reduce average total cost³⁸. Simultaneously, to maintain a long-term relationship, domestic enterprises must satisfy the requirements, particularly in terms of product quality. Hence, they tend to apply new quality standards in production. This will make domestic firms more competitive in product market in the medium- and long- term. Some empirical research find out that almost all domestic firms have difficulty in supplying raw materials/intermediate products to FDI enterprises due to their demanding requirements. However, if backward effect is present, domestic firms may progress considerably and export to the world market, or they may gradually become dominant in the domestic market. This backward effect is thus desirable in developing countries.

The spillover effect related to technology diffusion and transfer is usually an important objective of the poor countries. Via FDI, foreign firms will bring in modern technology for local production affiliates. However, the presence of foreign firms is mainly for exploitation of profit, which can be achieved with the advantages of their parent companies. Consequently, the activities of FDI enterprises encourage, but also put pressure on domestic firms to innovate their technology for higher competitiveness. However, the domestic firms in developing countries are usually weak in technology innovation capacity, while almost all modern technology belongs to large multinationals with technological capacity³⁹. To overcome such weaknesses, the domestic enterprises tend to apply modern technology instantly, either directly via establishing joint ventures with foreign partners, or indirectly via technology diffusion and transfer from FDI enterprises. FDI enterprises, though reluctant to reveal know-how to domestic competitors, are willing

³⁸ This is the result of economies of scale.

³⁹ Note that the technology market is imperfect and even non-existent in many circumstances. This is because of market failures, which come mainly from asymmetric information. Therefore, the buyer and seller usually reach no compromise, and tend to share the technology via establishing a joint venture or technology transfer to a domestic firm from a foreign enterprise.

to cooperate with domestic partners to establish joint ventures, resulting in know-how leakage. Nonetheless, the remaining issue for poor countries is whether they are capable of absorbing technology diffusion and transfer or not. The findings from many theoretical models⁴⁰ also show that the magnitudes of technology diffusion and transfer are also dependent upon the absorptive power of domestic firms⁴¹.

Another important type of spillover effects to developing economies is the competition effect which FDI enterprises put on domestic firms. However, this effect depends on market structure and technology level in the recipient country. For developing countries, in a number of circumstances, competition of FDI enterprises is fierce and generating negative effect before it can bring about other positive effects. New products by FDI enterprises, for instance, may replace those previously produced by domestic firms, thereby considerably affecting their existence. The presence of FDI itself promotes competition and in many cases, spillover effect may result in the fall in production quantity of domestic firms in the short run (Box 1). As a consequence, the affected domestic firms either have to exit the market or successfully adapt to the new competitive environment.

Apart from creating additional employment, FDI also helps to diffuse managerial knowledge and labor skills to receiving country. This spillover effect exists when FDI enterprises recruit local labor for the positions in the management, professional tasks, research and development. Knowledge diffusion also happens via the training of technical workers in local and at parent companies. The spillover effect is only present in such cases, however, if those labor exit the FDI enterprises to join the domestic firms or establish their own firms, in order to use the knowledge gained from working to subsidiaries of foreign firms or joint ventures. Yet that labor movement is in turn dependent upon other factors such as development of labor market, demand for skilled labor as well as the conditions related to market entry on commencing a business. These are the common problems facing developing countries⁴². In fact, evaluating spillover effect via labor movement is

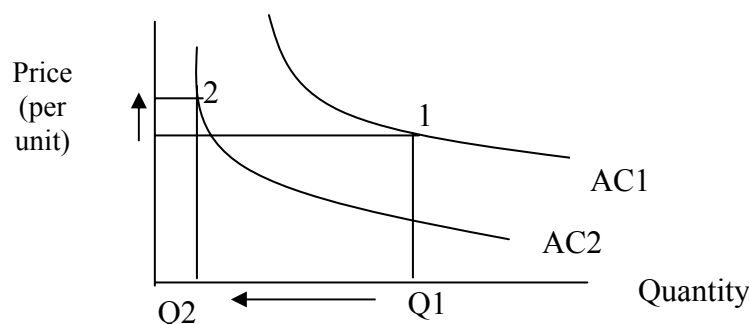
⁴⁰ See Blomstroem M., and Sjoehlm (1999); Haddad, M., and Harrison, A. (1993) and other materials.

⁴¹ According to Marin, A. and Bell, M. (2003), the absorptive power of domestic firms can be defined as the capacity of the firm to effectively use external knowledge from basic research, technical applications to deploy new production line.

⁴² In reality, it is hard to evaluate the spillover effect via labour movement. For example, some quantitative assessments only confirm the positive relationship between business outcome of the enterprises receiving labour from FDI counterparts in the same industries. Conversely, this relationship fails to be verified with the labour

challenging due to various reasons. For example, domestic firms which receive labor movement are unable or unwilling to provide the best working condition for those labors so as to make full use of their ability. The rise in labor productivity also comes from other factors, such as capital stock, market opportunities and competitiveness of the firms.

Box 1: Competition effect of FDI on domestic firms



The figure above is an example of domestic firms' reaction (or results of spillover effect) in the short run when FDI enterprises are present. Such presence will reduce the market shares of domestic firms and increase the fixed costs. Facing this problem, domestic firms tend to adjust via reduction of average cost (from AC_1 to AC_2). Yet if the initial competition effect from FDI enterprises is sufficiently strong, the firms will be forced to reduce the quantity (from Q_1 to Q_2) and the ultimate effect is to increase the price per unit (from position 1 to 2)

Source: Aitken and Harrison (1999).

1.3.2. Models for estimation

The spillover effects of FDI can be examined either by qualitative, quantitative methods or the combination of them. However, the outcomes from qualitative analysis are mainly descriptive in that it only determines whether there are *signs* of spillover effects or not. Meanwhile, it fails to determine if those spillover effects are *actually* present and to what extent they might be. To overcome this weakness, people prefer using quantitative

previously trained by FDI enterprises (in any forms, for example, self-train or training abroad) and work in FDI enterprises in a different industry. See Goerg, H. and Strobl, E. (2002).

methods based on the application of econometric models. These methods will produce more detailed outcome and thus are more useful to policy makers.

As mentioned above, FDI may generate spillover effects in a number of ways. Nevertheless, these effects can only be recognized via the changes in output production, measured in terms of productivity of the firms. To test whether there is existence of spillover effects, first of all, the relationship between the degree of participation of foreign partners and labor productivity of all enterprises, including those with foreign owned capital must be taken into account. Various proxies may be used to estimate the “degree of participation of foreign partners”. Meanwhile, the firm’s scale in the industry can be measured by the share in capital stock, labor, or revenue of FDI enterprises in the industries.

Alternative methods have been applied, depending upon data availability. For example, Haddad and Harrison (1993) examined the spillover effects of FDI in the Moroccan manufacturing industries by testing the difference in productivity between the one firm and the firm that have highest productivity in the industry⁴³. Their work finds that the spillover effect was only present when productivity gap between domestic and FDI enterprises was sufficiently small. The industries with higher share of FDI also had smaller productivity gap, and domestic firms narrowed the gap in productivity mainly due to competition effect, rather than technology transfer from FDI. Based on that methodology, Barrios (2000) tested the spillover effect of FDI on industries in the same manufacturing industries in Spain. The author then modified this model by incorporating dummy variables to represent industry-specific characteristics, and used expenditure on research and development (R&D) of the firm as a measure of technology capacity of domestic firms. The hypothesis was that if the technology level of the firms failed to achieve a certain level, the competition effect of FDI enterprises would be dominant and as a result,

⁴³ the author apply the approach on firms’ production function for hypothesis testing. Assuming that there are N firms operating in the j^{th} industry and the productivity level of i^{th} firm ($i=1,2,\dots,N$) is y_i . Let y_j , which denotes the highest productivity level in the j^{th} industry. Δy_i denotes the difference, in absolute terms, between productivity of firm i and the highest level in the industry, then can be calculated by the formula $\Delta y_i = y_j - y_i$. Assume further that Δy_i is a function of the share of FDI capital assets in firm i , denoted as α_i , the share of FDI capital assets in the j^{th} industry, denoted as α_j , and the size of the firm, measured by the ratio of sales revenue of the firm by the highest sales in industry j and denoted as s_i . The effects of shares of FDI capital assets and firm size on Δy_i can be expressed via the function $\Delta y_i = f(\alpha_i, \alpha_j, s_i)$. This function is applied to test the positive effect of α_i on Δy_i and the positive relationship between α_j and the reduction in difference of productivity.

positive spillover effect was non-existent. This hypothesis was verified in industries with low level of R&D expenditures⁴⁴ or low level of technology in the Spain. In addition, the share of foreign capital in FDI enterprises would positively affect the magnitude and growth rate of value added of the firms.

The methodology of Haddad and Harrison has a number of advantages, yet it is applicable only if necessary data are available. Meanwhile, in the case of Vietnam, such detailed information of the firms is hardly available. Hence, this study employs the analytical framework specified by Blomstrom and Sjöholm⁴⁵ (1999) and expands the model based on the approach of Barrios (2000).

In considering the effect of FDI on labor productivity of the firms, Blomstrom and Sjöholm assume a production function in which labor productivity of firm i in the j^{th} industry is dependent upon capital intensity, size of capital, skilled labors, scale of FDI projects - for instance, measured by the share of foreign capital in the firm - and some firm-specific and industry-specific measures. If Y , K , L and FDI respectively denote values added, (physical) capital assets, labor, contribution by foreign partner in total capital assets of firm i . The above relationship can be expressed via the productivity function of firm i , industry j as follow:

$$(10) \frac{Y_{ij}}{L_{ij}} = F\left(\frac{K_{ij}}{L_{ij}}, FDI_{ij}, Skill_{ij}, Scale_{ij}, DIndustry_j\right)$$

In this productivity function $Skill_{ij}$ and $Scale_{ij}$ are firm-specific variables. The former measures the skilled labors, while the latter denotes the size or scale of the firm in the industry. $DIndustry_j$ is the industry-specific dummy variable of the j^{th} industry. The hypothesis to test in this model is *how* changes in degree of participation of foreign partners (FDI_{ij}) affect the labor productivity of the firm.

The above model is also applied to estimate the spillover effect of FDI on domestic enterprises. As previously discussed, though the presence of FDI in one industry may indirectly affect business outcome of the firms in the others, yet direct effect is still on the

⁴⁴ This outcome is statistically insignificant in the industry with high R&D content and Barrios fails to provide any explanation to that.

firms in the same industry. Hence, the spillover effect can be recognized via the change in labor productivity of the domestic enterprises as a consequence of foreign direct investment in their areas of operations. In this model, $SFDI_j$ denotes the scale of foreign partners in the industry⁴⁶ and di denotes domestic enterprises. With the presence of FDI in j^{th} industry, labor productivity in the domestic enterprise may be dependent upon the factors as in equation (11):

$$(11) \left(\frac{Y}{L} \right)_{dij} = F \left(\left(\frac{K}{L} \right)_{dij}, SFDI_j, RD_{dij}, Skill_{dij} \right)$$

The productivity function in (11) can be applied to analyze the spillover effects of FDI on domestic enterprises. It can be modified to examine the existence of spillover effects by choosing different measure for $SFDI$. The spillover effects are only present if the scale of the firm affects productivity, as indicated by the sign and statistical significance of the variable. In fact, both the determination and separation of spillover effects via different transmission channels have been quite challenging.

In addition to direct measurement of effect, the model (11) can also test the effects of other factors which represent firms' absorptive power of spillover effects. It is widely believed that the spillover effect as well as its magnitude largely depends on the absorptive power or adaptability of local firms when foreign partners are present. The two proxies commonly cited are technology level and working skill of labors. In model (11), RD_{dij} denotes the expenditure on research and development of domestic firms in the industry, and can be used to measure the technology capacity of the firms. Besides, this expenditure level also has direct effect on labor productivity of the firms. The variable $Skill_{dij}$ is similar to RD_{dij} , in that it affects the productivity and captures the role of skilled labor in the mechanisms of spillover effects.

The above analytical framework is the background for the quantitative analysis in Chapter 4. As the applicability of theoretical model largely depends upon collected data,

⁴⁵ The advantage of model in Blomstroem and Sjöholm (1999) is that it is simple, applicable in the case of Vietnam as detailed data are unavailable, for example, there is no information on the maximum productivity of the firms in the industry.

⁴⁶ Various indices may be used to measure position such as the share of revenues of FDI enterprises in total revenues of the industry.

the quantitative models will be modified to be suitable to Vietnam's situation and to fully utilize the data available to authors.

II. LITERATURE REVIEWS ON EFFECTS OF FDI ON ECONOMIC GROWTH

The studies on the effects of FDI on economic growth have been rather diversifying, in terms of methodology, objectives and research scopes and come up with diversifying conclusion on the role of FDI on economic growth. Alfaro (2003) applies linear regression method to study the relationship between FDI and labor productivity in various industries, based on the panel data of 47 countries from 1981 to 1999. The research finds out that, FDI has positive effect on the productivity in manufacturing industries, whereas its effects on growth of agricultural and mining sectors are negative. Kokko (1994) also indicates a positive correlation between FDI and economic growth in Mexico. The positive effects of FDI on growth has also been verified in Kumar and Pradhan (2002), which uses panel data of 107 developing countries from 1980 to 1999.

Mencinger (2003), however, points out from the panel data of 8 East European transition economies from 1994 to 2001, that FDI undermines these countries' ability in catching up with EU. The possible reasons include the small scales of such economies and over-concentration of FDI on trade and finance which reduce the spillover effects in terms of labor productivity in economic sectors as a whole. FDI may not necessarily put further competition pressures, since the competitors in receiving countries are likely to be small and new, and thus are easily forced to exit the market.

Regarding the spillover effects, Gorge (2004) claims that FDI is the source of spillover effect of technology, yet the presence of such effects depends largely on the objective and subjective factors, and even on the estimation methods. Kokko (1994), and Blomstrom (1985), on the case of Mexico, draw a noteworthy conclusion that the spillover effect is almost unlikely to exist in protected industries. Also, they maintain that the capacity to absorb technology, as well as the technology gap between the home and host countries, determines the presence of spillover effects. In a case study of China, Xiang Li (2001) claims that the form of ownership in domestic enterprises may also affect the presence of such effects. Specifically, the spillover effect via imitation and copy of technology is argued to be non-existent in SOEs, but in private firms instead. On the contrary, spillover effect from competition is present in SOEs, while having no significant

pressure on private firms. From other perspective, the foreign capital ownership extent of FDI enterprise, Sjöholm (1999) finds no difference in the magnitudes of spillover effects between various forms of ownership in FDI enterprises for the case of Indonesia. Meanwhile, other research, also in Indonesia, such as Taki (2001), maintains that spillover effect from enterprises with 100 percent foreign owned capital is greater than that from joint ventures.

Haskel *et al* (2002) figures out a positive correlation between FDI and Total Factor Productivity (TFP) of domestic enterprises. This finding has also been confirmed in the case of Lithuania by Smarzynska B.K. (2002). Smarzynska argues that domestic market-oriented foreign enterprises had stronger positive effect on the productivity of domestic firms than export-oriented foreign enterprises. Haddad and Harrison (1993) also find evidence of spillover effects on productivity in the case of Morocco's manufacturing industries, yet the magnitude of such effect was smaller in industries with more foreign enterprises. In general, a number of researches have confirmed the positive relationship between FDI and labor productivity in domestic enterprises, yet negative relationship is also found in some circumstances.

In Vietnam, despite of the vast literature on FDI, in-depth research on the relationship between FDI and economic growth, especially using quantitative methods, are still limited in number. Among them is Nguyen Mai (2003), which considers the effect of FDI on economic growth, both vertically and horizontally, based on Vietnam's FDI statistics from 1988 to 2003, with additional forecasts to 2005. According to him, FDI has positive effect on economic growth at the national level, and therefore, Vietnam needs to expand the market and seek new partners in order to attract more FDI inflows.

Freeman (2002) presents another comprehensive research on FDI in Vietnam till 2002. The author reviews recent experience in attracting FDI and points out some weakness in Vietnam's FDI policy regimes, as well as making inference on determinants of FDI in Vietnam. The conclusion drawn from the research is that the policies related to economic reform and trade liberalization positively affect the business environment for the investors. Nevertheless, to promote further FDI inflows, Vietnam needs to strengthen the co-ordination and improvement of these policies.

Nguyen Thi Phuong Hoa (2004) studies the effects of FDI on productivity growth in the whole economy, under the analytical framework of relationship between FDI and poverty. She then draws a conclusion of FDI's positive effect on provincial economic growth, via formation and accumulation of capital assets. In addition, there is evidence of positive interrelationship between FDI and human resources. According to this author, in the group of agricultural and forestry processing industries, the positive spillover effects of FDI are only present at the national level. These effects happen mainly via labor movement. Yet such conclusion fails to be sufficiently convincing, since labor movement is the necessary, but insufficient, condition for the presence of FDI spillover effects.

Nguyen Thi Lien Hoa (2002) analyzes the itinerary for FDI attraction in Vietnam from 1996 to 2001. Nguyen Thi Huong and Bui Huy Nhung (2003) compares and analyzes the movements of FDI inflows to Vietnam and China in the period 1979-2002, and draws out some lessons for Vietnam. They verify the important role of FDI on Vietnam's development in terms of economic growth, economic structure improvement, State budget revenues, employment generation, etc. In order to attract FDI, they agree unanimously that synchronizing the promulgation of law, policies, development plan for industries, etc. is necessary.

Doan Ngoc Phuc (2003) analyzes the situations, problems and prospects of FDI inflows to Vietnam in the period 1988-2003. The author argues that Vietnam's economic growth is largely dependent on the foreign-invested sector. The changes in this sector, hence, directly affect the growth rate of the national economy. In particular, FDI has considerable contribution to value added of industry sector, capital formulation, job creation, promoting commodity production and exports, improving the balance of payments and strengthening the competitiveness of the national economy.

CHAPTER 3

THE EFFECT OF FDI ON GROWTH VIA INVESTMENT CHANNEL

I. MODELLING THE EFFECT

The effect of FDI on economic growth via investment channel is discussed in equation (9) of the theoretical background in Chapter II. The model also considers the effect of Vietnam's integration into regional and world economy (dummy variable DIN_t) starting by joining ASEAN in July 1995, on growth. The model can be written as:

$$(12) \quad g_t = f(FDI_t, H_t, (FDI \times H)_t, DIN_t, X_t)$$

The dependent variable g_t denotes economic growth, measured by the growth rate of real GDP per capita and is a function of a number of independent variables. The effects of independent variables on economic growth are expressed via coefficient estimates, their signs and statistical significance. FDI_t represents foreign direct investment, measured by the ratio of implemented FDI in GDP. The variable H_t represents the stock of human capital in order to assess the effect of human capital on growth. Then $(FDI \times H)_t$ has a very important implication in this model in that it helps to test the interaction between FDI and human capital, as well as the role of human capital on the contribution of FDI to economic growth. This variable is included in the model as it has been verified hypothesis in a number of countries that the contribution of FDI on growth also depends on its skilled labors. In this model, $(FDI \times H)_t$ is regarded as the measure of the economy's absorptive power of FDI. X_t is the set of other independent variables which affect growth, such as government expenditure, domestic investment as determinants of growth and import, export turnovers reflecting the openness of the economy, etc.

II. DATA

The model uses the time series data in the period 1988-2003 from various sources. The figures on GDP per capita growth g_t and (implemented) FDI_t ⁴⁷ are collected and

⁴⁷ The authors have difficulty in collecting separate time series data for implemented FDI of foreign countries. The separation, if inaccurate, may result in misleading outcome and conclusions. Hence, for simplicity, the authors assume that the ratio of foreign partners' implemented capital to the total implemented capital is constant. Under such assumption, the use of total implemented capital in the quantitative analysis is acceptable.

calculated based on official data by General Statistic Office and the Foreign Investment Agency – Ministry of Planning and Investment.

In theory, human capital represents the skill of labor force, and is formed via different channels, of which education is dominant. However, in quantitative analysis, there has been no consensus so far on the determination of human capital. The common and observable reason in developing countries is the poor statistic system which lacks necessary data and is not frequently updated. Consequently, there is no “standard” measure of human capital. Therefore, the model (12) will test this hypothesis by using three proxy variables for human capital to compare the effects. These are HP_t , HS_t and HBC_t . The first variable is the proportion of labor, currently working in the economy, who have finished primary school; the second one is the proportion of labor that have finished secondary school, and the third one is the rate of literacy in the whole population. Data for these variables come from the Ministry of Labor, Invalids and Social Affairs, and other sources.

Other independent variables included in the model which affect growth are $GOVC_t$, permanent expenditure from State Budget relative to GDP, and DIN_t , the dummy variable for economic integration. DIN_t gets the value of 1 since the third quarter of 1995 and 0 otherwise. The data on $GOVC_t$ are supplied by General Statistic Office and the report *Vietnam's Economy in 2003* by Central Institute for Economic Management. Since the base period is 1988 – the first year of implementing Law on Foreign Investment – the number of observations in annual data is only 16. To overcome this weakness, the data for the model is disaggregated into quarterly data.

III. ESTIMATION RESULTS

The above model is estimated by the Two-Stage Least Squares method (2SLS) with consideration for serial correlation and stationarity of time series data⁴⁸. In methodology, when serial correlation is evident, ordinary least squares method (OLS) is inefficient and the 2SLS method proves to be a better choice. Besides, 2SLS with correction for serial correlation also allows for the use of the lags of independent variables (or explanatory variables) and dependent variables as instruments into the model. Therefore, this model

may also capture the lagged effects of the variables on growth. The model uses two instrumental variables⁴⁹, the logarithm of real GDP per capita (denoted as $\log(GDPPC)$) and investment expenditure from the Budget for development (denoted as $GOVI$). To meet the requirements for instrumental variables, they are assumed to affect dependent and explanatory variables, yet it has no effect on the error terms. In fact, the two variables $\log(GDPPC)$ and $GOVI$ can satisfy that condition and thus are included in the model. Estimation results of the model using HS_t as proxy for human capital are presented from estimations I to IV in Table 3. The results for the model using HBC_t and HP_t as proxy variables for human capital are in estimations V and VI respectively.

According to the estimates from I to IV, permanent expenditure of the Government has positive effect on economic growth. However the magnitude of such effect decreases when Vietnam integrates itself into the regional and world economy. This result may seem contradictory with the research findings in other countries, yet it is consistent with a transition economy shifting its structure to market economy as Vietnam. Such result is also because Vietnam's economy is relatively small, with the share of permanent expenditure⁵⁰ in GDP increasing continuously and reaching 15.5 percent in 2003, though its share in total Budget expenditure fell to approximately 56.8 percent in 2003. Particularly, the proportions of health and education in permanent expenditure are high, which directly affects investment in human capital. Since the years 1990s, the proportion of investment in total Budget expenditure⁵¹ has risen, and according to a number of qualitative assessment, this may have positive effect on economic growth. Furthermore, the estimates come from short time series, from 1988 to 2003, and thus tend to describe the effect in the medium term rather than in the longterm. Nevertheless, in the long run, increasing the share of Government expenditure will reduce investment and consequently undermines economic growth.

⁴⁸ Before estimating the model, the Augmented Dickey Fuller tests are undertaken. The outcomes show that all the variables in the model are integrated of order 1 or 2. The Breusch – Godfrey tests are also carried out, and have confirmed serial correlation in the series.

⁴⁹ Note that in TSLS method, the constant is an instrument and is automatically included in the model.

⁵⁰ Excluding payment of debt and aids.

⁵¹ Note that this does not mention the credit and investment funds of the SOEs.

**Table 3: Estimation results of effect of FDI on growth from 1988 to 2003
(Using instrumental variables in 2SLS method)**

	Dependent variable- Logarithm of real GDP per capita					
	I	II	III	IV	V	VI
HS_t	0.26 (1.18)	0.16 (0.97)	0.14 (0.83)	-0.32* (-1.96)		
HBC_t					0.30** (2.21)	
HP_t						0.36*** (2.66)
$GOVC_t$	0.54*** (4.33)	0.48*** (3.38)	0.48*** (3.41)	0.31*** (2.3)	0.41*** (4.42)	0.42*** (4.4)
FDI_t	0.16 (1.19)	0.33** (2.51)		-8.1** (-2.61)	26.35*** (3.02)	5.1*** (3.66)
DIN_t		-0.005*** (-2.47)	-0.005*** (-2.55)	-0.006*** (-2.99)	-0.0008 (-0.54)	0.0004 (0.25)
$(FDI * HS)_t$			1.02** (2.51)	25.88*** (2.74)		
$(FDI * HBC)_t$					-27.9*** (-2.99)	
$(FDI * HP)_t$						-18.7*** (-3.53)
<i>Adjusted - R²</i>	0.586	0.633	0.64	0.69	0.72	0.75
<i>Number of observations</i>	60	60	60	60	60	60

Note:

1. the t-statistics are given in bracket.
2. The notations *, **, *** imply that the coefficient is statistically significant at the level of 10%; 5% and 1%, respective.
3. All the tests use White Heteroskedasticity robust standard errors⁵².

Assuming that the economy is closed⁵³, the tests show that human capital and FDI have insignificant effects on economic growth, though their coefficients are positive. Vietnam's economic integration, marked by joining ASEAN since the third quarter of 1995, has both positive and negative effect on the whole economy, as indicated in the models II to IV. The increase in absolute terms of the coefficient of FDI_t and its statistical significance indicates that FDI has positive effect on economic growth. This result also re-confirms the argument that, integration is favourable, but it also presents difficulties and challenges to the economy. According to the estimates in Table 3, the negative effect is

⁵² Heteroskedasticity happens when an independent variable in the model is systematically related to the error terms in the model. The presence of heteroskedasticity in the model does not affect the estimates of the coefficients, i.e. the estimates of the coefficients are still consistent and unbiased. Yet it does affect the variance of coefficient and tends to make F-test and t-test less meaningful in testing. This phenomenon is quite common in cross section data.

⁵³ Note that, this refers to the closed economy in "official" term. In fact, Vietnam has opened before that, as reflected by the promulgation of Law on Foreign Investment and expansion of foreign economic relationship right after Doi Moi (Innovation) process.

very small, despite of large positive effect which at least promotes the contribution of FDI to growth.

Estimation III tests the interaction between FDI and human capital, and the effect of this interaction on economic growth. Hence, the variable FDI_t is not controlled in this test. The result confirms that such interaction and its effect on growth are present in the case of FDI inflows to Vietnam at 5% significant level. Accordingly, this is coincident with findings of some researches in other countries. For example, Borensztein *et al* (1995) also finds a positive relationship between FDI and human capital in a research based on the panel data from 69 developing countries.

Estimation IV examines the effects of each variable and the interaction between FDI and human capital on growth. The signs of the variables HS_t and FDI_t change from positive to negative, and both are statistically significant. Meanwhile, the positive interaction between these variables is still confirmed and its effect on growth becomes stronger. This implies that, in the case of Vietnam, human capital is a determinant of the FDI contribution to economic growth. The changes in signs of coefficients of FDI_t and HS_t show that the poor labor skills in Vietnam is hindering the contribution of FDI to growth. Such result seems to coincide with Borensztein *et al* (1995) when he stated that the benefits of FDI to host country, regarding the effect on growth, also depends on its absorptive capability (measured by the interaction between FDI and HS_t), and in order to capture such benefits, human capital must reach a certain threshold. In other words, too low labor skills will restrict the effect of FDI on growth.

For further test of the above results, in subsequent estimations, each of the variables HP_t and HBC_t is used to replace variable HS_t , where HP_t represents the labor skills at lower level than HS_t , while HBC_t denotes human capital at national level (including labor force and non-working population) and is used only for reference. From the estimation results in IV and VI, if each factor are considered separately, both human capital (HP_t) and FDI_t have positive effect on growth, though their interaction is unfavorable to growth. This again confirms that, limited labor skills hinder the growth impact of FDI. It may also be interpreted that the effect of FDI is still evident despite of low labor skills, yet the

positive spillover effects -such as technology transfer, labor movement or the linkages in the form of supply and purchase of intermediate products - are less likely to happen. Simultaneously, the negative effect (such as the competition pressure on domestic enterprises) may be stronger, and this consequence is unfavorable to the whole economy. These remarks will be tested again in Chapter 4.

To test whether FDI is crowding out or crowding in domestic investment and whether the contribution of FDI to growth is greater or smaller than that of domestic investment, the two other estimations are undertaken based on the quantitative analysis method specified in Borenzstein *et al* (1995). The first model (model I) considers the effect of FDI on gross national investment relative to GDP, based on the estimated coefficient of FDI. As FDI is already included in gross national investment, the coefficient estimated of FDI being positive and equal to unity implies that FDI has no effect to gross national investment. If the coefficient estimate is positive and different from unity, then there is evidence of complementary effect on domestic investment. The research also tests the effects of other variables such as human capital and Vietnam's economic integration on gross national investment via the variable DIN_t . The second model (model II) is used to test FDI contribution, relative to domestic investment, on growth by comparing the coefficient estimates of FDI and gross national investment. If the coefficient of FDI is greater than that of gross national investment and both are statistically significant, then there is further evidence of positive effect of FDI on growth. The test results are presented in Table 4.

According to Table 4, in model I, the estimated coefficient of FDI is positive, different from unity, and statistically significant. This implies that FDI has complementary effect on domestic investment. This result is consistent with qualitative analysis in Chapter I, and the arguments that Vietnam is a net receiver of FDI and FDI is complementary to domestic investment. Model II also provides an evidence that FDI is more efficient than domestic capital, as the coefficient of FDI is greater than that of gross investment. The estimated coefficient of human capital is negative, but statistically insignificant, which shows that its effect on dependent variable in both models is equal to zero or ambiguous⁵⁴.

⁵⁴ A technical reason to this is the multi orthogonality phenomenon. Hence, this regression only focuses on the coefficient estimates of I_t and FDI_t .

Table 4: FDI on Gross National Investment and productivity of FDI

	Model I	Model II
	Dependent variable: Gross national investment relative to GDP	Dependent variable: growth rate of real GDP per capita
HS_t	-3.5 (-1.2)	-0.04 (-0.83)
$\text{Log } GDPPC_t$	0.09 (1.41)	
I_t		0.25*** (5.4)
FDI_t	1.3* (2.21)	0.51*** (3.8)
DIN_t	0.02 (0.16)	-0.05*** (-3.8)
Adjusted R^2	0.74	0.44
Number of observations	15	15

Note:

1. The t-statistics are given in brackets.
2. The notations *, **, *** imply that the estimated coefficient is statistically significant at the level of 10%, 5%, and 1%, respectively.
3. All the tests use White Heteroskedasticity robust standard errors. The Wald tests are undertaken to reject the null hypothesis that the coefficient of FDI is equal to 1 in model 1 and equal to 0 in the model2
4. The variables HS_t , DIN_t , FDI_t , $GDPPC_t$ are no different from previous tests. I_t represents the gross national investment relative to GDP.
5. Model 1 is estimated by TSLS method and the instrumental variable is the growth rate of real GDP per capita.

The above quantitative analysis shows that Vietnam benefits from economic integration, particularly from positive impacts of FDI on growth over the last years. FDI not only provides investment fund and increases capital stock, but also improves investment efficiency of the whole economy. Nevertheless, the issue of low labor skills is hindering further contribution of this source of capital to growth.

CHAPTER 4

SPILOVER EFFECTS OF FOREIGN DIRECT INVESTMENT

I. SOME QUALITATIVE ANALYSES

The analyses in this Chapter are derived from the data of Enterprise Survey 2001 by GSO. These data, however, fail to give sufficiently details to support in-depth analysis of different channels of spillovers. The authors, therefore, undertook a statistics survey on 33 domestic and 60 foreign-invested enterprises. Nevertheless, as the sample is small, the survey results are only used for qualitative analysis of general patterns of spillover effects via different channels. Meanwhile, the quantitative analysis fully employs the data from GSO Enterprise survey. The detail on GSO database will be presented in the next section.

1.1. Some general information on the survey sample

The Central Institute for Economic Management undertook a survey from September to December, 2004 on foreign-invested and domestic enterprises in three industry groups (food processing, textiles and footwear, mechanics and electronics). The locations of those enterprises are narrowed down to include only Ho Chi Minh and Ha Noi and some surrounding provinces and cities. In these locations, economic activities are assessed as so active. Besides, the spillover effects of FDI enterprises on domestic enterprises are considered to be most evident because of restricted geographical distance between enterprises. The three groups of industries are selected as representatives of three different types of technology in processing industries: (1) local-input-intensive technology; (2) labor-intensive technology; and (3) capital-intensive technology.

Two different questionnaires are used for foreign and domestic enterprise, although there are number questions are alike to make the results comparable. Random stratified sampling method is applied based on the enterprise list provided by Foreign Direct Investment Agency and Department of Enterprise Development, Ministry of Planning and Investment. The research team has selected 300 FDI enterprises and 300 domestic enterprises for the survey by mail. There were 93 enterprise responded. The detailed information about those enterprises is presented in the table 5.

Table 5: The number of surveyed enterprises

	<i>Domestic enterprises</i>		<i>FDI enterprises</i>	
	Number of enterprises	%	Number of enterprises	%
Mechanics – electronics	12	36.36	22	36.67
Textiles and footwear	10	30.30	21	35.00
Food processing	11	33.33	17	28.33
Total	33	100.00	60	100.00

Source: Enterprise Survey by CIEM.

1.2. Labor, investment, and business performance

In general, there is a clear difference in employment scale between domestic and FDI enterprises (Table 6). In mechanics and electronics, the average number of labor in a domestic firm is equal to only half of that in FDI enterprise. Inverse result happens with domestic firms in textiles and footwear industry. In food processing, the difference in average quantity of labor is negligible between enterprises.

Table 6: Labor size of enterprises

Unit: Labor per enterprise

	<i>FDI enterprises</i>			<i>Domestic enterprises</i>		
	2001	2002	2003	2001	2002	2003
Mechanics and Electronics	245	300	363	125	126	146
Textiles, garment and footwear	640	627	748	1723	1403	1574
Food processing	264	254	324	279	290	323

Source: Enterprise Survey of CIEM (2004).

It should be noted that the labor size of surveyed enterprises changes dramatically over time, especially in foreign invested enterprises. The annual labor growth (for 2001-2003) in FDI enterprises rises at 21 percent in mechanics - electronics, and approximately 10 percent in the other two industries. The growth rate of employment is smaller in domestic enterprises, and even falls in textiles, garment and footwear industry. This trend can be explained by various reasons, such as reduction in labor cost and improvement of labor productivity, or reduction in production scale of those firms because of competition pressure regarding products and/or market share of FDI enterprises. The upward trend in

labor size of FDI is promising, showing that these firms have expanded domestic consumer market or export⁵⁵.

Regarding capital size, the capital (stock capital) of FDI enterprises are on average 18 times as large as that of domestic counterparts in food processing industry, 10 times for mechanics and electronics and about 3.3 times for textiles, garment and footwear. These results imply that FDI enterprises employ higher level of technology than domestic firms and the difference is even larger if the industry is more capital intensive⁵⁶.

Also relating with capital and labor of enterprise, the capital/labor ratio measures capital intensity or capital concentration of enterprises. Table 7 shows that FDI enterprises in all three sectors are much more capital intensive, about three times as large, than domestic counterparts. The smallest difference in this is in textiles, garment and footwear industry, which is consistent with the above data of relatively large labor size of this industry.

Table 7: The capital/labor ratios of enterprises

Unit: million VND/labor

	<i>FDI enterprises</i>			<i>Domestic enterprises</i>		
	2002	2003	growth (%)	2002	2003	growth (%)
Mechanics – Electronics	1537.13	1545.96	0.57	471.10	405.35	-13.96
Textiles, Garment and Footwear	181.10	183.21	1.16	116.32	129.66	11.21
Food Processing	1002.33	989.84	-1.25	400.59	447.62	11.74
Total	924.25	924.71	0.05	308.08	309.91	0.60

Source: Enterprise Survey of CIEM (2004).

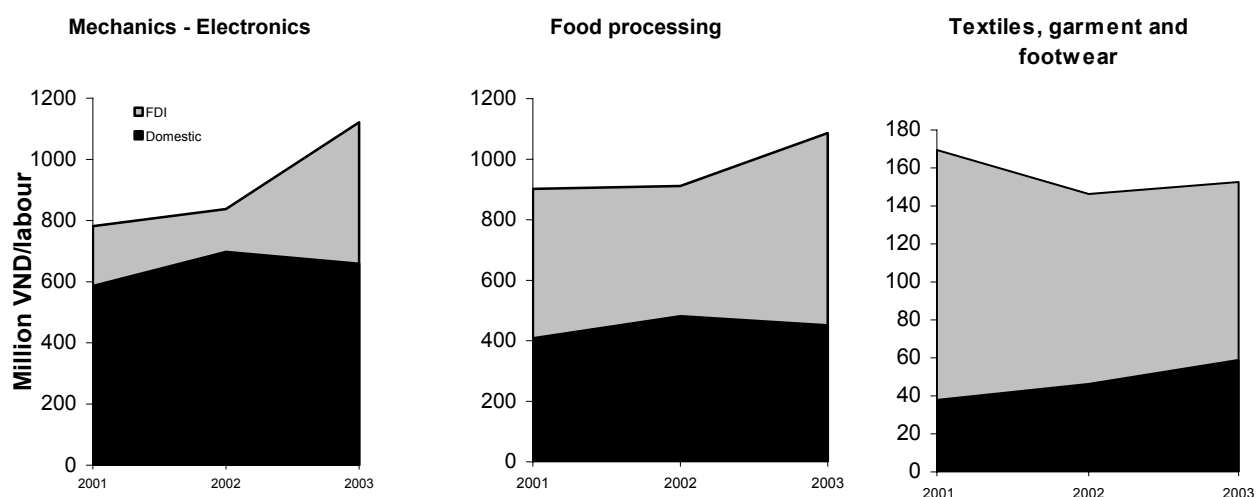
For the last two years, the capital/labor ratio of domestic enterprises in textiles, garment and food processing industries has risen at about 11 percent, while mechanics and electronics industries has fallen by 14 percent. The comparison of Tables 7 and 8 implies that the decreasing capital intensity in mechanics – electronics and increasing capital intensity in textiles and garment may be due to the change in labor size. For food processing industry, the rise in capital concentration perhaps results from the acceleration in new investment, together with production expansion.

⁵⁵ In general, a number of FDI enterprises are operating below their full capacity. Therefore, increasing labour productivity is not necessarily a result of production expansion.

⁵⁶ This remark is also confirmed in another survey by CIEM in 2004 on technology innovation of enterprises. The results show that, almost 50 percent of private firms and 42 percent SOEs use technology of 1980s at the latest, while the corresponding proportion of FDI enterprises is only 13 percent.

A measure of labor productivity is defined as value added per labor of the firms. Yet the survey data on the value added of the enterprises are often inaccurate. Hence, the figure on revenue/labor were employed as proxy variable, though this may not be fully reflected the labor productivity as the firms' product composition may change. Nevertheless, if the production process is considered in a short period of 3 years, with the comparison focusing on the trend rather than absolute values, then the revenue per labor to a certain extent may be used as proxy for index on value added per labor. Chart 6 shows that there are considerable change of labor productivity between different enterprises.

Chart 6: Average Revenues per labor of the Firms



Source: Enterprise Survey of CIEM (2004).

Regarding form of ownership, the productivity of FDI enterprises in two more capital intensive industries (electronics, food processing) rose rapidly in 2003, while that of domestic counterparts decreased slightly. Conversely, in the labor intensive industry (textile), it went up continuously with domestic enterprises, while in FDI sector, it fell dramatically in 2002 before rising back slightly in 2003. It should be noted that in 2003, in the two capital intensive industries, the number of labor in FDI enterprises rose rapidly while that of domestic firms only went up. Therefore, the large differences in absolute term as well as proportionate increases in average revenues shows that the FDI enterprises are more efficient than domestic counterparts, possibly due to increasing productivity and/or market share. However, the difference in productivity is smaller in more capital intensive.

Besides, Chart 6 also indicates a possible sign of spillover effects in textiles - garment industry, in that the domestic firms are adjusting their behaviors, firstly by reducing labors and accordingly increasing average revenue. The gap in average revenues between FDI and domestic enterprises has been narrowed down, from 4.3 times in 2001 to 2.7 times in 2003.

1.3. Identifying the existence of spillover effects

To find out the signal of spillover existence, the questionnaires are designed based on the channels of spillover effects discussed in theoretical background. The below section will focus on determining the effects via four key channels. A caveat is that, qualitative analysis allows the identification of signs of spillover effects via enterprises' behavior adjustment, labor movements, or technology transfer, etc. However, this kind of results is insufficient to determine the existence as well as magnitudes of those effects, while the representativeness is limited due to small sample. Hence, the results in this section are only complementary to the quantitative analysis in the next section.

Labor turnover: Movement of skilled labors from FDI to domestic enterprises is believed an important source of spillover effects. The spillover effects are present if these labors use the knowledge acquired from working at FDI enterprises, for their working in the new domestic one. In this case, the two possible mechanisms for spillover effects are that these labors establish their own firms, and that they are recruited in domestic firms those in same industry with FDI enterprises. Table 8 shows the labor turnover ratio in the period 2001-2003. It is very high in FDI enterprises (43.4 percent), and is the highest in textiles, garment and footwear. Of those movements, approximately 42 percent are of skilled labors⁵⁷ in which for textile is about 37% and 50.3% for food processing. Based on these figures, the probability of spillovers in food processing is larger than that in textiles and garment industry⁵⁸.

⁵⁷ "Skilled labour" is defined in this research as those who are at grade 3 or above, or have finished at least six month training class.

⁵⁸ This result is perhaps consistent with the argument in Nguyen Thi Phuong Hoa (2003) that a number of labours have established their own firms thanks to the accumulated knowledge and capital when working for FDI enterprises in food processing for livestock.

Table 8: The proportion of labor movements relative to average labor in 3 years

	<i>Unit: percent</i>	
	<i>FDI enterprises</i>	<i>Domestic enterprises</i>
Mechanics - Electronics	48.4	8.0
Textiles, garment and footwear	53.4	5.8
Food processing	27.2	5.5
Total	43.4	6.5

Source: Enterprise survey by CIEM (2004).

However, 32 percent of the surveyed FDI enterprises informed that their moved labors mainly move out to other FDI enterprises rather than domestic ones, 23 percent said that these labors establish their own firms, 18 percent claim that they move out to work in domestic enterprises, with the rest having no idea about that. Hence, despite of high labor mobility in FDI enterprises in the surveyed industries, one third of the labor movements are still within FDI sector and it is very likely that most of them are skilled labors. This result to some extent supports the proposition that FDI sector are clustering with respect to their labor in developing countries.

Regarding labor recruitment of domestic firms, the labors recruited from 2001 to 2003 from the surrounding residential areas (mainly young people just joint with labor force) accounted for the largest share in new recruitment (Table 9).

Table 9: Sources of labors for domestic firms

	<i>Unit: percentage of response</i>			
	<i>Mechanics - Electronics</i>	<i>Textiles, garment and footwear</i>	<i>Food processing</i>	<i>Total</i>
From FDI enterprises	0.00	0.00	4.60	2.00
From domestic firms	14.30	23.10	31.80	24.50
State agencies	7.10	0.00	13.60	8.20
Surrounding residential areas	42.90	53.90	40.90	44.90
Others	35.70	23.10	9.10	20.40
Total	100.00	100.00	100.00	100.00

Source: Enterprise survey by CIEM (2004).

Only 4.6 percent of the domestic firms in food processing respond that they recruited labor from FDI enterprises, while in the others, such labor movement from FDI enterprises is unobservable.

In short, the analysis with respect to both (1) labor turnover from FDI and (2) sources of labors newly recruited by domestic firms all show that there exists labor movement between FDI and domestic enterprises, although such movement is still weak.

Even not taking into account the labor skills, this implies the low probability of spillovers via this labor turnover channel.

Technology diffusion and transfer: is of great importance while looking at positive effects of FDI. Yet the survey results in 93 enterprises by CIEM produces no support to this, which is partly explained by the absorptive power of new technology of the FDI enterprises themselves.

Numerous studies have indicated that, new technology are mainly developed by parent companies, and this advantage is exploited by local affiliates to focus on production and raising market shares. Hence, the higher ability to access new technology of affiliates in recipient countries, the more likely spillover effect is via technology leakage. However, the survey results show that 70 percent of FDI enterprises rarely get access to technology from parent companies, while 36 percent of them claim that technology innovation resulted from actual situation in the recipient countries. That is, the operations of local affiliates in Vietnam seem highly independent of their parent companies, particularly in investment in technology innovation and access to new technology from parent companies. There are a couple of explanations to this. *Firstly*, the parent companies themselves are small in scale, and accordingly have limited R&D capacity and support to foreign affiliates. This claim appears to be consistent with current situation, where FDI come mainly from small foreign firms. *Secondly*, Vietnam may not be the strategic market, or the technology level is low, which removes the needs for investment with higher technology. This situation, therefore, restricts the spillover effects via technology leakage and the technology imitation of domestic firms.

It should also be stressed that spillover effects are also dependent upon the absorptive capability of technology of domestic firms as well as the technology gap between FDI and domestic enterprises. Nonetheless, precise determination of these two terms is complicated. Until now, technologically absorptive capability of domestic enterprise is commonly measured by education level or professional skills of labor, and technology innovation as well determined by firms' expenditure on R&D. The survey results show that, in 2003, the proportion of skilled labors in domestic enterprises is remarkably lower than that of FDI enterprises. Moreover, this ratio seems to be reduced year by year (Table 10).

Table 10: Share of skilled labor in enterprises

Unit: %

	<i>FDI enterprises</i>			<i>Domestic enterprises</i>		
	2001	2002	2003	2001	2002	2003
Mechanics – Electronics	73.1	72.3	73.2	56.2	55.6	52.1
Textiles, garment and footwear	62.9	58.6	58.1	46.6	35.0	36.7
Food processing	38.1	41.0	39.9	41.7	47.7	45.9
Overall	59.5	57.9	57.8	48.8	47.7	46.4

Source: Enterprise survey by CIEM (2004).

Skilled labors are defined as those who have finished at least a six-month vocational training

Table 11 shows the ratio of R&D expenditure relative to revenues. In this paper, R&D expenditure is defined as the expenditure made on research, experiments to improve and/or create a new product. The R&D expenditure of FDI enterprises is three times as large as that of domestic enterprises, with the gap being largest in mechanics – electronics. If capital concentration is included, the technology content of mechanical and electronic products of FDI sector is apparently higher and thus, the possibility of spillovers existence is low.

Table 11: Ratio of R&D expenditure relative to revenues

Unit: %

	<i>FDI enterprises</i>			<i>Domestic Enterprises</i>		
	2001	2002	2003	2001	2002	2003
Mechanics – Electronics	9.00	8.40	5.60	0.98	0.90	0.80
Textiles, garment and footwear	3.90	2.10	1.40	2.02	2.30	1.04
Food processing	0.60	0.60	0.80	0.60	0.50	2.90
Total	6.90	4.80	3.20	1.30	1.02	1.14

Source: Enterprise survey by CIEM (2004).

The R&D expenditure in textiles, garment is by far higher than that in food processing industry, and the differences between domestic and foreign firms are small. This is partly due to domestic higher competition pressure to the firms in this industry, which force them to continuously innovate and improve their products to meet market demand. It should be noted that the average expenditure on R&D/sales ratio in FDI sector, particularly in mechanics and electronics, is decreasing. There may be various reasons for this, for instance, FDI enterprises have no domestic competitors.

Hence, the analysis in any aspect, based on the sample of 93 enterprises, to some extent confirms that there are few signals of positive spillover effects via technology

transfer in Vietnam and these effects are weak, if any. Also, the survey results show that this effect is more likely to be present in textiles, garment and food processing industries rather than high tech industry like electronics

Production Linkages: As analyzed above, production linkages are important in generating the spillover effect. The “backward effect” might be present if the domestic enterprises supply inputs to, or distribute products from foreign counterparts. The effect would be stronger if the volumes of distributed products or supplied inputs are higher, i.e. proportional relationship. The survey results show that, only 31 percent of production inputs of FDI enterprises are supplied by domestic firms, while the rest being supplied by other FDI counterparts, imports or direct purchases from households. More importantly, the data from 2001 to 2003 exhibit no change in this pattern (Table 12). Regarding the reasons for importing inputs, 42.6 percent of FDI enterprises said that such inputs are unavailable in Vietnam, 15 percent said that such input are available but higher price than imported, 25 percent informed that domestic inputs are of lower quality. On average, the FDI enterprises in these three industries purchase 8 to 13 percent of their inputs from other FDI firms.

Table 12: Sources of inputs to FDI enterprises

Unit: percent

	2001	2002	2003
Overall for three industries			
From domestic enterprises	31.65	31.05	31.70
From FDI enterprises	16.20	17.85	16.89
From other sources (import, etc.)	51.96	51.10	51.41
Mechanics – Electronics			
From domestic enterprises	17.37	18.71	20.43
From FDI enterprises	8.02	9.73	10.32
From other sources (import, etc.)	74.47	71.56	69.25
Textiles, garment and footwear			
From domestic enterprises	35.68	34.88	37.15
From FDI enterprises	24.29	23.82	23.35
From other sources (import, etc.)	39.62	41.30	39.50
Food processing			
From domestic enterprises	48.18	44.92	41.98
From FDI enterprises	18.64	22.76	18.91
From other sources (import, etc.)	33.18	32.31	39.11

Source: Enterprise survey by CIEM (2004).

Regarding product distributions, the proportion of products of FDI enterprises distributed via domestic firms is rather low, especially in textiles, garment and footwear industry (Table 13). There is an important objective reason for this is the mandatory requirement of export proportion set on FDI enterprises.

Table 13: Composition of sales of FDI enterprises

	2001	2002	2003
Mechanics – Electronics			
Export	25.34	25.14	24.36
Domestic sales	74.66	74.86	75.64
<i>Sales to domestic enterprises</i>	42.64	42.98	43.83
<i>Sales to FDI enterprises</i>	21.34	20.49	20.32
<i>Self distribution</i>	36.02	36.53	35.84
Textiles, garment – Footwear			
Export	79.96	79.43	79.81
Domestic sales	20.04	20.57	20.19
<i>Sales to domestic enterprises</i>	35.79	33.97	34.11
<i>Sales to FDI enterprises</i>	3.16	2.78	2.78
<i>Self distribution</i>	61.06	63.25	63.11
Food processing			
Export	25.8	27.76	23.21
Domestic sales	74.2	72.24	76.79
<i>Sales to domestic enterprises</i>	60.08	48.39	48.39
<i>Sales to FDI enterprises</i>	13.06	13.48	13.03
<i>Self distribution</i>	26.85	38.14	38.58

Source: Enterprise survey by CIEM (2004).

Competition: The presence of FDI may impose considerable competition pressure on domestic firms, and first of all on those in the same industry. This pressure may force domestic firm to innovate their technology. To capture the evidence of this effect, the questionnaires collect information on competition pressure in the markets⁵⁹ as judged by the firms themselves. The results show that the FDI enterprise face the fiercest competition pressure by other FDI firms whereas for domestic firm they assess the competition pressure from FDI and domestic firm are more or less equal. (Table 14). While the FDI enterprises face fiercest competition in product markets with respect to types, designs, the

⁵⁹ The enterprises put grades on competition pressure in terms of market share, product quality, production technology, and attraction of skilled labours.

domestic firms considered the pressure of higher technology from FDI enterprises as the most significant.

Table 14: Judgment on competition pressure

(competition pressure: highest=10, lowest =1)

	<i>FDI enterprises</i>				<i>Domestic Enterprises</i>		
	SOEs	Private firms	FDI enterprises	Households	Domestic firms	FDI enterprises	Households
Market shares	4.18	4.88	7.00	2.81	6.02	6.62	2.85
Products	4.00	5.00	7.24	2.90	6.12	6.41	2.62
Technology	3.47	4.59	7.14	2.45	6.11	7.43	2.75
Skilled labors	3.97	4.47	6.25	2.36	5.76	7.00	3.23

Source: Enterprise survey by CIEM.

This explains, to a certain extent, a fact that FDI enterprises always try to introduce new products to the market (to compete with other FDI enterprises), while the domestic firms focus on improving the production line and technology instead.

In summary, from the above analysis of survey results on four possible channels, there is little evidence of positive spillover effects at the firm level. Yet the analysis also shows no signs of negative spillover effect either, as the results at least exhibit the rise in revenues of surveyed enterprises in recent years. The presence of spillover effects, according to these survey results, is more likely in food processing than mechanics-electronics and textiles, garment industries. Among possible explanations of less likely existence of spillovers effects, the technology gap, indicated by capital intensity and R&D expenditure, and the lack of linkages between two sectors are the most important reasons. However, this qualitative analysis fails to take into account other factors, such as geographical location, forms of ownership of enterprise, etc. Besides, because of the limitation in representativeness of the sample, the evidence and conclusion in this section may fail to fully reflect what *actually* happens in practice. The quantitative analysis in the next section, using a larger survey sample, will provide additional tests on the presence and the extent of spillover effects.

II. QUANTITATIVE ANALYSIS OF SPILLOVER EFFECTS

2.1. Data

The 2001 survey⁶⁰ was undertaken on a large number of more than 56 thousand enterprises. It covered almost all activities in the national economy which were divided into 20 two-digit industries. The codes for manufacturing sector range from 15 to 37. The number of surveyed enterprises in these industries was 13,238, which accounted for 23.4 percent of all surveyed enterprises and 53 percent of total FDI capital implemented by 2001 (Table 15).

Table 15: Basic information on FDI in manufacturing industries

<i>2 digit industries</i>	Number of enterprises in the industry		Labor share of FDI sector (%)	Stock capital share of FDI sector (%)
	Number	Share (%)		
D15. Food and beverages	3765	28.44	0.154	0.507
D16. tobacco products	28	0.21	0.015	0.013
D17. Textiles	539	4.07	0.275	0.523
D18. wearing apparel; tanning	823	6.22	0.265	0.431
D19. luggage, handbags, saddlery and footwear	325	2.46	0.281	0.412
D20. wood and timber, bamboo products	991	7.49	0.104	0.307
D21. Paper and paper products	513	3.88	0.132	0.416
D22. Publishing, printing, copying and recording	444	3.35	0.025	0.022
D23. Coke, petroleum products	12	0.09	0.386	0.835
D24. Chemicals and chemical products	552	4.17	0.218	0.668
D25. Rubber and plastic products	652	4.93	0.284	0.542
D26. Glassware, pottery, porcelain, construction materials	1305	9.86	0.135	0.621
D27. Metals	182	1.37	0.314	0.588
D28. Metal products	984	7.43	0.208	0.609
D29. Machinery and equipments	344	2.60	0.139	0.407
D30. Office equipments and computers	7	0.05	0.946	0.996
D31. Electric machinery and equipments	202	1.53	0.422	0.757
D32. Radios, televisions and means of communication	109	0.82	0.495	0.718
D33. Medical, precision, optical instruments, watches and clocks	55	0.42	0.446	0.841
D34. Motor vehicles, lorries with trailer	232	1.75	0.402	0.768

⁶⁰ The Enterprise Survey by GSO is a large survey undertaken annually on July 1 or April 1. There have been 3 such surveys since 2001 with the large sample of over 50 thousand enterprises. Despite of large sample, the weakness of these surveys is that the units in the sample and survey content are not completely homogeneous, which limits its value to users. The data used in this research is from 2001 data, produced from the survey in July 2003 in accordance with Decision 05/2002/QĐ-TTg dated 04/01/2002 of the Prime Minister. Compared with the 2002 and 2003 data, the 2001 data better satisfy the requirement of level of detailed information for the research.

	Number of enterprises in the industry			
D35. Other means of transport	344	2.60	0.293	0.748
D36. Beds, wardrobes, tables, chairs	816	6.16	0.365	0.682
D37. Recycling	14	0.11	0.000	0.000

Source: Survey of Enterprise in 2001, GSO.

Two-digit industries are as listed in GSO industry classification

Some enterprises in database were omitted due to missing information. The remaining sample then consists of 12,024 enterprises. Of which, there are 4,895 SOEs⁶¹ (or 40.7 percent), 5,673 private firms⁶² (or 47.18 percent), and 1,456 FDI enterprises (or 11.43 percent) in the form of either joint venture enterprises or wholly foreign ownership enterprises. Other forms of foreign investment are excluded from the sample. However, the above number of enterprises is subject to change in quantitative analysis in each specific sub-section as some observations are further removed due to missing information.

So as to be comparable to the results in the survey by CIEM, this quantitative analysis is also undertaken in the three groups of industries: food processing, textiles and garment, and mechanics – electronics. Of the 23 sub-industries and roughly 12 thousand enterprises, there are 3,765 enterprises in food processing (code 15); 1,687 in textiles, garment and footwear (codes 17, 18, 19); and 1,026 in mechanics and electronics (codes 29, 34, 30, 32, 35).

2. 2. FDI and labor productivity of enterprises

2.2.1. The model

Firstly, the research team undertakes the tests on the determinants of productivity in the enterprises, using the model in theoretical background in Chapter 2. The model is of the form:

$$Pr\ oductivity = f(cap_intensity, Scale, Skill, Fcontract, Dprov, Dos, Dfood, Dtext, Delec)$$

⁶¹ The SOEs in this sample are 100 percent owned by the State, controlled by central or local governments, one-member limited liability companies of the States, joint stock companies of which the State is controlling investor. Due to sample arrangement, the affiliates of 90 and 91 General Corporations are treated as separate enterprises and become independent observations since their information on labour, capital, revenues, etc. are collected independently.

⁶² The private enterprises in the sample are those operating under the Enterprise Law, including private firms, limited liability companies, partnerships, joint stock companies, as well as co-operative enterprises operating under the Law on Co-operatives (these are included since they operate as a enterprises, especially in the field of non-agricultural production).

The dependent variable *Productivity* measures labor productivity of the firms in terms of values added per labor. The variable *Skill* reflects the quality of labor in the firms, as it measures the proportion of labor finishing at least college and vocational training relative to the rest in the firms. The coefficient on this variable is expected to be positive, reflecting its positive effect on labor productivity of the firms. *Scale* denotes firm size in the industry, measured by the share of the firm in total revenues of the 4 digit sub-industry. Besides, the variable *Scale* also shows market power of the firm in the industry, which can be verified in the model. The firm with higher share of revenue is assumed to have economies of scale and thus, higher productivity. In other words, *Scale* is positively related to labor productivity. *Cap_intensity* measures the capital intensity per labor of the firms, calculated as average fixed capital per labor⁶³. This variable is also regarded as a measure of physical capital assets created by the enterprises in investment process and thus will have a direct and positive affect on labor productivity.

The remaining variables are dummies. *Dfood*, *Dtext* and *DElec* have been used in quantitative analysis in Chapter 3 to capture the effect of each sub-industry on the overall productivity level of enterprise sector in cross section data. The dummy variable *Dprov* is equal to unity if the firm has headquarters in provinces with better performance of FDI inflows, including Hanoi, Hochiminh, Danang cities and the surrounding provinces of key industrial centers (Hungyen, Haiduong, Haiphong, Hatay, Quangninh, Baria – Vungtau, Dongnai, Binhduong)⁶⁴, and equal to zero otherwise. *Dprov* is included in order to capture the effects of (1) change in economic region, and (2) concentration of FDI as well as industrial activities that possibly affect on labor productivity of the firms. In addition, to control sub industry- specific characteristics, the analysis uses 22 dummy variables, namely *indus1* to *indus22*, to stand for the two-digit sub-industries.

The dummy variable *Dos* denotes the form of ownership of FDI enterprises, and has been used in Chapter 3 analysis. However, in this model, *Dos* is used to test and

⁶³ Various research point out that *cap_intensity* is endogenous in the above model since labour productivity also has backward effect on the level of cumulation and thus affect the capital/labour ratio. However, this research treats *cap_intensity* as exogenous due to the use of cross section data at a certain point in time. *cap_intensity* may be endogenous in time series data analysis.

⁶⁴ The determination of these provinces is completely based on the available data from this survey, rather than the classification of key economic regions in other reports. According to the calculations from enterprise survey, these provinces account for up to 80% of FDI inflows to Vietnam in 2001.

compare the effects of ownership on labor productivity under three different scenarios. In the first scenario, *Dos* represents foreign ownership, being equal to 1 with FDI enterprises (joint ventures or 100 percent foreign owned capital) and 0 otherwise. In this respect, *Dos* captures the effect of FDI enterprises on labor productivity of the firms in general. In the second scenario, *Dos* becomes *mino*, being equal to 1 if foreign ownership is in the form of joint ventures and zero otherwise. Thus this variable will capture the effect of joint venture form on labor productivity. In the third scenario, *Dos* becomes *major*, being equal to 1 for enterprises with 100 percent foreign ownership and 0 otherwise. That is, this dummy variable controls the effect of this form of ownership on labor productivity. Both *major* and *mino* are used to substitute for *Dos* in the second model. Besides, these two variables are also used to test the hypothesis that enterprises with 100 percent foreign-owned capital are more self-control, independent on domestic partners, and thus are more efficient. These enterprises tend to bring about more advance technology due to the control of technology, and thus their labor productivity tends to be higher than that of joint venture⁶⁵.

First of all, the model is estimated for manufacturing sector as a whole, and then re-estimated for the three mentioned sub-industries. Heteroskedasticity is corrected by using White-corrected error.

2.2.2. Estimation results

Table 16 presents the overall results of regression model for the whole manufacturing, as well as separate three sub-industries (food processing, textiles and garment, and mechanics – electronics). The only difference is that the model in the first four estimations uses *Dos*, while the model in the 4 subsequent estimations uses *major* and *mino* in stead of *Dos*, with the purpose as described above.

The estimation results show that, the variables included in the model only explain to a certain extent the change in labor productivity as the values of adjusted R^2 are moderate⁶⁶. The estimates of I and IV indicate that, capital intensity, skilled labors, position, or size of firm in the industry, location at major industrial centers positively affect labor productivity of the firms, including domestic and foreign firms. The exact

⁶⁵ See Sjöholm (1998) for further information.

⁶⁶ However, it should be noted that in a large sample of nearly 10,000 firms, it is very hard to achieve a high adjusted R^2 .

result is also reported in food processing industry. Meanwhile estimation results on the other two industries are, to some extent, different from above. In particular, the majority of these variables, except for foreign factor and location, have no significant effect on labor productivity in textiles, garment. The estimates in I and IV even indicate that the textiles and garment industry reduces the overall labor productivity. This may be explained by the labor intensity of the industry, with less demand for capital and skilled labors than those in the two remaining industries. Besides, the statistics also show that the variance of variable measuring capital intensity is rather large, i.e. there is a great difference between the capital intensity of each firm and industry average⁶⁷.

The presence of FDI positively affects labor productivity of the enterprise sector in general (estimation I). This implies that FDI helps to raise the overall productivity level of the economy. This further supports the results of FDI effect on growth in Chapter 3. Nonetheless, there exists cross-industry differences in the magnitudes of effects of FDI, as indicated by the estimated coefficient of this variable in the estimations II-IV. The largest coefficient is that of mechanics – electronics, which shows the significant effect of FDI on productivity level in this industry. This is consistent with the results of survey by CIEM as discussed above. In mechanics – electronics, almost all FDI enterprises have a much higher technology level than that of domestic enterprises, which positively affect the labor productivity. The calculation of average productivity in the processing industry shows that, at 1% significance level, average labor productivity of foreign enterprises is 33.3 percent higher than that of domestic counterparts. Similarly, in food processing, textiles-garments, mechanics and electronics industries, the average productivity of FDI enterprises is higher than that of domestic firms by 25.8 percent, 20 percent, 70 percent, respectively.

The coefficient of *cap_intensity* in model is statistically high significant. Besides, the Chow test on the difference in coefficients of the equations shows that the contribution of *cap_intensity* will be higher in more capital-intensive industry. The most evident example for this is mechanics-electronics industry, where the contribution of such variable is the largest. However, the explanatory power of this variable is low relative to other variables. This is perhaps because the enterprises only use a low level of capacity, which

⁶⁷ Larger variance of the variable makes the confidence interval become wider and the estimates of the coefficient are unlikely to be accepted at a reason level of significance.

reduces labor productivity, albeit large capital investment. Besides, labor productivity may result from investment in the past. Therefore, the considerable increase in investment may not have immediate effect on labor productivity. This is also a weakness when using cross section data.

Table 16: Estimation results of model on effect of FDI on labor productivity of all enterprises

Variable	Variable <i>Dos</i>				Variables <i>major and mino</i>			
	I OVERALL	II FOOD	III TEXTILES – GARMENT	IV MECHANICS - ELECTRONICS	V OVERALL	VI FOOD	VII TEXTILES - GARMENT	VIII MECHANICS - ELECTRONICS
<i>Cap_intensity</i>	.159341* (6.39)	.16548*** (162.97)	0.1831 (3.31)	.27757*** (2.85)	.1597* (6.95)	.16541*** (382.23)	0.1898 (4.66)	0.297565 (1.76)
<i>Skill</i>	.2896** (21.48)	.2582** (19.27)	0.221 (5.54)	.5907*** (4.94)	.28914** (33.2)	.258** (17.53)	0.2218 (5.44)	.6093** (18.51)
<i>Scale</i>	.38075** (47.66)	.38666** (43.52)	0.3171 (6.03)	1.243*** (15.14)	.38099*** (63.76)	.386** (52.45)	0.3149 (6.16)	1.299** (14.69)
<i>Dos</i>	1.0278** (43.41)	.7412** (44.93)	.8351* (12.38)	3.251*** (5.38)				
<i>DProv</i>	.16708** (22.73)	.01965* (6.33)	.24326** (14.44)	0.1891 (0.57)	.16812** (37.71)	0.0201 (3.88)	.24756* (10.14)	0.2723 (5.62)
<i>Major</i>					1.0209** (47.87)	.73543** (55.84)	.8172** (15.02)	3.1675** (14.45)
<i>Mino</i>					1.0498*** (78.55)	.7554** (52.58)	.97895* (11.93)	4.5405** (15.85)
<i>DFood</i>	0.0321 (1.92)				0.0343 (3.67)			
<i>DText</i>	-.1857* (-12.38)				-.18517* (-9.74)			
<i>DElec</i>	4.2133* (7.44)				4.2166* (8.42)			
<i>indus</i>	Estimated	Estimated	Estimated	Estimated	estimated	estimated	estimated	estimated
<i>_cons</i>	5.7478*** (302.01)	5.7986** (59.83)	4.363** (15.08)	15.692*** (19.52)	5.745*** (1651.93)	5.7958*** (65.23)	4.363** (12.83)	15.58*** (91.15)
<i>Number of observations</i>	10591	2994	1389	429	10591	2994	1389	429
<i>R-squared</i>	0.6328	0.4887	0.4595	0.5568	0.6386	0.4857	0.4599	0.553
<i>p-value</i>					0.1721	0.0681	0.1074	0.0311

Note:

1. The dependent variable is average labor productivity, calculated as total values added/number of labors. The model is estimated in log form
2. The value in brackets under each line is the value of t test, based on, heteroskedasticity-robust standard errors.
3. The notations *, **, *** implies that the coefficient is statistically significant at the respective level of 10%; 5% and 1%.
4. p-value is the probability of F-test when testing the equality of coefficients of variables *mino* and *major*.

In the model including *Dos*, the estimate of coefficient on *Scale* is positive, and statistically significant in almost all industries. This implies that big firms with respect to revenue are increasing the overall productivity of the enterprises in Vietnam. This may not necessarily hold at the sub-sector level, for example, textiles, garment industry as in estimations III. In this industry, the size or position of one firm has no effect on labor productivity. This partly reflects the fact that the firms in such industry are labor intensive, with low labor productivity, and operate in a competitive environment. Therefore, smaller firms are more flexible, and lower investment does not necessarily imply lower labor productivity.

In many cases, competition effect of large enterprises, on small firms, may be captured by the variable *Scale*. However, in the case of Vietnam, there is no evidence of such effect. That is, the large and small enterprises are likely to operate independently. Besides, despite of high revenue, a number of large enterprises are involved in export activities and thus, the shares of small firms in domestic market are unaffected.

The coefficient of *Dprov* is positive, and statistically significant, which implies that in general, the firms in FDI-concentrated regions have higher labor productivity than those located elsewhere. This can be explained by more favorable infrastructure facilities, spatial distance to consumer market and business environment than other regions. Hence, the firms can reduce the costs, while having higher labor productivity. With respect to each specific industry, this effect is more significant in textiles and garment industry, while being non-existent in mechanics and electronics. A possible reason for this is that the main consumer markets for textiles, garment enterprises are large urban areas, while key consumer markets for mechanics and electronics products may include both domestic and international markets. On the other hand, in Vietnam, the firms operating in mechanics - electronics industry are more likely to locate in the urban areas, than the rural or remote areas. Hence, there is insignificant difference in infrastructure between such firms whether they are inside or outside the key economic zones .

The estimations from V to VIII provide the answer to how different forms of ownership of FDI enterprises affect overall labor productivity as well as productivity of each industry. It can be seen that the estimated coefficients of the 2 variables. *Major* and

mino, are all statistically significant, and positive in all industry groups. This re-confirms the result in estimations from I to IV that the presence of FDI, regardless of the form of ownership, increases labor productivity. These two forms of enterprises all exhibit larger change in productivity than domestic firms, with the largest change in the mechanics and electronics industry. This may be because most mechanics and electronics enterprises are foreign invested, and thus, the change in average labor productivity is largely determined by these enterprises. The estimation results, nevertheless, show that the effects on labor productivity of the two forms of FDI enterprises only differ slightly in food processing and mechanics – electronics, while such difference is almost negligible in textiles-garment⁶⁸. Hence, there is no support for the hypothesis that the enterprises with 100 percent foreign owned capital will be more self-control, and thus their labor productivity is higher than that of joint ventures.

This finding seems similar to results in Sjöholm (1998) in the case of Indonesia. There are many reasons for this in the case of Vietnam. For instance, in the joint ventures, despite of commitments with domestic firms, foreigners have more important role in making decisions⁶⁹ as the capital contribution of foreign partner is larger. That is, there is no significant difference between the enterprises with 100 percent foreign owned capital and joint ventures in terms of making investment and production decisions, while the joint ventures even have informational advantage in the domestic market. The second explanation is that in the case of Vietnam, the enterprises with 100 percent foreign owned capital are yet to achieve their highest level of efficiency. This explanation, if verifiable, will be of great significance to policy consideration. Due to lack of information, however, this Research can not go into details on this issue.

The above results all confirm that, at the micro level, the presence of FDI sector increases the overall labor productivity of enterprises in Vietnam. This finding is consistent with, and further clarifies the analytical results in Chapter 3 on the positive

⁶⁸ F-test allows for the test of equality between estimated coefficients on variables *major* and *mino*. The results show that the above difference is statistically insignificant for all enterprises, while being statistically significant at 5% for mechanic industry and at 10% for food processing industry. At 1% level of significance, there is no difference in labour productivity between these two forms of enterprises.

effect of FDI on economic growth, at the national or macro level. One of the reasons for such effect is that FDI enterprises contribute to the increase in new capital goods, thereby fostering economic growth. These results, however, ignore the determination of whether the increase in overall labor productivity of the enterprises is also due to the positive spillover effects. This issue will be discussed in the next section.

2.3. Spillover effects of FDI on labor productivity of domestic firms

2.3.1. The model

There are two widely used models for examining spillover effects. The first one considers these effects at the industry level⁷⁰. In this instance, the variables in the model will be aggregated to industry averages⁷¹. The drawback of this model type is the possible under- or over-estimation of the effect. This usually happens when there is causality between productivities of industry and FDI enterprises. The FDI enterprises may concentrate on the industries with high labor productivity and capital intensity. Therefore, the rise in labor productivity of the whole industry when FDI enterprises are present may not necessarily be due to spillover effects, yet due to high productivity level in that industry instead. In another aspect, the foreign direct investment into a certain industry may increase the intra-industry competition, causing bankruptcy to some firms. As a result, the average productivity in that industry goes up. In this instance, FDI at least creates a negative spillover effect, yet the average productivity of the industry still goes up. Therefore, in these two scenarios, complication arises when figuring out spillover effects of FDI on the average productivity of the industry. Besides, there are other determinants of labor productivity that fail to be included in the analysis at the industry level⁷².

⁶⁹ Calculations from these sample data show that 78 percent of the joint ventures have at least 65 percent of capital contributed by foreign investors. For further information on the situation of joint ventures, see Nguyen Vo Hung *et al.*, 2003.

⁷⁰ The 3,4 or 5 digit sub-industries are commonly used to evaluate the spillover effects to each specific industry.

⁷¹ For further details, see Kokko (1993), Findlay (1978).

⁷² See Smarzynska (2002), Aitken and Harison (1999), Görg and Greenaway (2004).

In an attempt to overcome those shortcomings, the quantitative model in this section is constructed based on the theoretical foundation in Chapter 2, and focus on the effect at the firm level. That model has the form of:

$$\text{Productivity}_i = f(\text{cap_intensity}_i, \text{Share}_{ij}, \text{Skill}_i, \text{Scale}_i, \text{Contract}_i, \text{Dprov}_i, \text{Dindustry}_i)$$

The key difference between this model and the previous model is that, the independent variable *Share* denotes the presence and size of FDI enterprises in the same j^{th} four-digit sub-industry.

It is noted that the application of various proxy variables for *Share* often reflects data availability⁷³. In the case of Vietnam, using revenues as proxy may cause problem in analyzing the spillover effects as the export proportions of FDI enterprises are usually high in the three surveyed industries. Using the share of stock capital in the industry may be better, yet its weakness are the lack of required data, and overvaluation of the spillover effects as FDI enterprises tend to invest in capital intensive sector and then fail to use up all capacity. Hence, this Research uses the share of labor of FDI enterprises in 4-digit industry as proxy for FDI presence. In addition to solving those problems, such proxy variable allows for depicting the spillover effect via labor turnover.

In this model, the share of labor is weighed based on the average time period (in year) of FDI enterprises in j^{th} four-digit industry so as to consider the possible effect of their life-spans. This is done based on the assumption that, *ceteris paribus*, spillover effect in the j^{th} industry is stronger if the FDI enterprise has operated for a longer period. This effect is included in the model by taking the weights, i.e. the time period that the firm exists in the industry. This is the difference between this paper and previous literature on the spillover effects using share of labors to represent the presence of FDI in the same industry.

Contract is a dummy variable, taking value 1 if the enterprise has relationship with any foreign partner, and 0 otherwise. This variable is included to capture the spillover

⁷³ As discussed in Chapter 2, a number of research employ various variables to represent *share*. Some of them use the revenue share of FDI enterprises, others employ the proportion of fixed capital, or the share of labour to consider the effect of the presence of FDI on other domestic firms in the same industry.

effects via exports⁷⁴ (Gorge and Greenaway, 2004). However, the test on this variable only confirms whether the firm has relationship with foreign partner or not, while ignoring the type as well as magnitude of such relationship.

The rest variables in model (17) are similar as those in model (16), i.e. the test of intra-industry effects of factors (capital, labor), size or position of enterprise. Hence, in order to determine the spillover effects, this section will focus more on the variable *Share*.

In this model, there is evidence of spillover effects if the coefficient on *Share* is statistically significant. Whether the effect is positive or negative depends on the sign of the estimated coefficient. If neither of these cases happened, the presence of FDI has no effect on productivity of domestic enterprises, particularly those in the same industry. Another thing to note is in the above model is the assumption that the spillover effect is proportional to, and linear in the presence of FDI firms. This may not hold completely in practice, since the spillover effect may be non-linear in foreign investment (Blomstrom, Kokko 2000).

The use of cross section data, supplied by GSO, is a limitation to the results. In some instances, the use of cross section data may result in negative spillover effect of FDI. Gorge and Greenaway (2004) review literature on spillover effects using many types of data and draw a conclusion that, using cross section data may succeed only in producing short term effects, while the issue of spillover effects should be look in long term perspective⁷⁵. This technical limitation suggests that one should interpret this estimation with caution.

After omitting the observations with missing information, the sample in this section consists of 9,590 domestic enterprises, with 2,865 in food processing, 1,121 in textiles, garment, and 381 in mechanics and electronics industry. This classification is used for estimations from I to IV in Tables 17 and 18. Besides, the enterprises are divided into 2 sub-sectors, SOEs and private firms. This division is useful in analyzing spillover effects

⁷⁴ If the domestic enterprise has relationship with foreign partners, it can learn and improve export activities, expand production or have more incentives in technology innovation. The spillover effect via export is rarely discussed in the case of developed countries, yet often emphasized in the case of developing countries, especially those that are export-oriented.

of FDI on those two different legal forms of domestic enterprises. The results for SOEs are presented in estimations V-VIII, while those for private firms are in estimations IX-XII in Tables 17 and 18.

Similar to previous section, this section also distinguishes the effects caused by enterprises with wholly foreign ownership and joint ventures, with the results presented in Table 18. The key difference is that the variable *share*, which shows the presence of FDI in model (17), is replaced by the two variables *sharemino* and *sharemajor*. They measure labor shares in joint ventures and whole foreign enterprises respectively, in the 4-digit industry. They are also time weighed in a similar way to the variable *share*⁷⁶ as discussed above.

2.3.2. Results and discussion

The results in Table 17 show that, only 18 to 30 percent of the changes in labor productivity of the domestic firms in general and of each specific industry are explained by the model⁷⁷. For the SOEs, the explanation level of the variables is even lower, implying that the labor productivity in this group is dependent upon other omitted factors, and this is one noteworthy limitation. In general, except for the variable *Contract*, other variables have positive effects on labor productivity. Nevertheless, in each industry as well as each group of enterprises, the effect of each variable is different. In particular, the skilled labors have no effect on labor productivity of the surveyed industries and of domestic private firms. Regarding the domestic private firms in textiles, garment and mechanic, electronics, neither capital nor skilled labor exhibits an unambiguous effect on

⁷⁵ Some factors may have lagged effects on labour productivity of the firm. These variables may be captured by, lagged variables. Yet this is not applicable with cross section data. Hence, in the short term, FDI may have negative or no effect on the productivity of the enterprises, but in the long term, this result may not hold.

⁷⁶ In principle, the two variables is detachable in 2 different equations, and can be cross checked on their equality to avoid the correlation between *sharemino* and *sharemajor*. However, as can be seen from estimating those equations and comparing them to the combined equation, the two approaches exhibit no significant difference in magnitudes and statistical significance. Hence, it is possible that the *sharemino* and *sharemajor* are both correlated to *share*, rather than being correlated to each other. Actual calculations show that the correlation coefficient between these two variables is 0.04 while their correlation coefficients with *share* are 0.48 and 0.82, respectively. Hence, the combination of those two variables in the model is acceptable in this report.

⁷⁷ The model is estimated using heteroskedasticity-robust standard errors since heteroskedasticity is highly evident in the model. After transforming to normal linear form, and standardizing the data at sample mean, the test for heteroskedasticity produces more desirable results. Although there is still evidence of heteroskedasticity, the test results from the graphs and the comments from experts show that the model is acceptable after using corrected errors.

labor productivity. This is because those firms mainly use unskilled workers, and they are small in terms of capital. Tables 20 and 21 also show that the location in large urban areas also has a positive effect on the productivity in textiles, garment and SOEs, albeit no effect on the domestic private firms. This may be explained by the lack of competitiveness of private firms relative to those in large urban areas. Hence, the private firms usually supply to the poorer markets, such as rural areas.

The test in estimation I, Table 17 indicates the positive effect of FDI on labor productivity of the domestic enterprises. This implies that, in general, positive spillover effects are present. At the industry level, the coefficient on *share* is positive in all industry groups, and in both groups of enterprises, yet it is only statistically significant in food processing industry. In addition, FDI seems to have no effects on labor productivity of SOEs. Meanwhile, the presence of FDI increases labor productivity of private firms in general, and of those in textiles, garment and food processing industries in particular.

The presence of spillover effects in food processing industry (estimation II) seems to support the results from CIEM survey, i.e. this industry exhibits the highest likelihood of spillover effects. Besides, in the survey sample of GSO, the number of private firms in food processing industry is very large, and these have just emerged in recent years. Anyway, such emergence, though late, in this competitive environment proves that the firms in this industry are very likely to exist.

It is difficult to explain the presence of spillover effects occurring in private firms in textiles, garment industry, whereas such effects do not exist in those industries as a whole. The hypothesis that the spillover effect is inversely related to technology gap is unverified in textiles, garment industry⁷⁸. Otherwise, those effects must begin in the SOEs rather than the private firms. Therefore, it can only be explained by the large number of SOEs in textiles, garment industry which have operated for a long time and dominated the market previously. That is, SOEs have to adapt to the additional competition pressures by FDI. This process might have happened for a long time, and thus, by the time of the 2001 survey, the effect may become ambiguous. Meanwhile, the private firms are established at

⁷⁸ Another calculation, using data from Enterprise survey, shows that the industries with larger technology gaps relative to FDI tend to exhibit larger spillover effects.

later points in time, and thus have to accept the environment, in which there are both SOEs and FDI enterprises already. Moreover, as a number of enterprises in textiles, garment do the assigned work for the foreign firms, the spillover effect may be present. Nevertheless, the presence of such effect is only in private firms. Hence, the possible reason may be that these firms use resources more efficiently than the SOEs. At the same time, they must perform better than the SOEs in many aspects, such as quality control. This induces these private firms to engage in more research activities, to innovate the designs, technology, etc.

Similar argument, however, is inapplicable in mechanics-electronics industry, since the spillover effects are non-existent if two investment forms as above are combined. It should be noted that of the three surveyed industries, the mechanics-electronics industry is the most capital intensive. Therefore, in this industry, the great differences between the sizes of capital and labor skills may restrict the presence and magnitudes of spillover effects.

Hence, the findings in this analysis is contrary to the argument that, relative to private firms, SOEs have better contact with FDI enterprises, due to advantages in capital, technology and skilled labors, and thus may acquire stronger spillover effects. The absence of spillover effects in SOE sector (estimations V-VIII, Table 20) can be explained by the following reasons:

(i) *Different investment mechanisms for innovating equipments:* Private firms are more flexible than the SOEs in terms of capital use and equipment innovation because the capital use of SOEs are controlled by the State regulations. Besides, the decision making process is shorter for private firms, i.e. they can make the most of business opportunities, or rapid technology transfer. Nevertheless, these firms tend to be small in terms of capital, which restricts the magnitude of possible spillover effects.

(ii) *Different mechanisms for labor management:* SOEs have difficulty in adjusting the quality and quantity of labors to meet production demand. By contrast, private firms can recruit, promote, shift or dismiss their labor in more flexible way. It has long been argued that labor abundance exists in a number of SOEs, but fails to be resolved due to various reasons. This also restricts the spillover effect via movements of skilled labors

from foreign enterprises. In fact, labor movement may even be in the reverse direction, i.e. the SOEs are losing skilled labors.

SOEs also are said normally obey better employment regulation on labor contract, social insurance, they therefore, have larger labor cost, and are thus inflexible under the presence of FDI firms.

(iii) *Policies to protect domestic production*: A number of SOEs operate in highly protected industries, and thus have less incentive to improve production capacity and their competitiveness. Therefore, these firms are still existent, and the effects of FDI enterprises on them are hardly significant.

The explanation of this situation is rather complicated, due to the challenges in separating the impact via each channel, and thus, it is hard to draw an accurate conclusion on the presence of spillover effects in SOEs. For instance, as can be seen from the estimation results of the above model, spillover effect may be positive in one channel, yet negative in the other, and such effects may ultimately offset each other.

Table 18 shows the spillover effects of FDI by forms of foreign ownership. According to the model construction, the enterprises with wholly foreign capital and joint ventures are separated, to examine the spillover effect of each type on labor productivity of domestic firms. The estimation results indicate that, almost all impacts of firm-specific characteristics are consistent with those in Table 18. There is still evidence of positive spillover effects on domestic enterprises. These effects are present on private firms, yet non-existent on SOEs. Therefore, the following section only analyzes further the spillover effect of investment form on the labor productivity of domestic firms in general and in each industry in particular.

The only difference in Table 18 results relative to those in Table 17 is the positive spillover effects of joint ventures generate in mechanics-electronics industry (estimation IV), though only the private firms in this industry acquire such effect (estimation XII). In textiles-garment industry, the spillover effect, by enterprises with whole foreign capital, is only confirmed in private firms (estimation XI). However, the spillover effect in food processing industry is due to both forms of FDI, with stronger spillover effect from the enterprises with wholly foreign capital, as indicated by the F-test.

The analysis shows that the spillover effects in the moderately labor-intensive (food processing) and highly labor-intensive (textiles, garment) industries possibly come from the competition and learning process (“forward” and/or “backward” channel). The results of CIEM survey in previous section further support the prediction that the FDI enterprises in these two industries tend to have better relationship with domestic firms via the purchase of inputs and sales of outputs.

In mechanics-electronics industries, the above business relation seems to be less likely. Beside that, whole foreign enterprises in this industry tend to be more capital intensive than joint ventures. Therefore, if we assume that the technology level of private firms in such industry is low, together with the assumptions of technology gap and absorptive capability of domestic enterprises, then joint ventures are more likely to generate positive spillover effects. This conclusion seems contradictory with the finding by Sjöholm (1998) using panel data from 1990 to 1995 for Indonesia⁷⁹. Hence, the above explanation may not be completely accurate, due to the use of cross-sectional data and lack of required information.

⁷⁹ Takii (2001) produces a contrary result, and argues that the enterprises with higher share of foreign owned capital will generate larger spillover effects on the domestic enterprises.

Table 17: Estimation results of FDI impact on labor productivity of domestic enterprises, using the variable *Share*

	Domestic enterprises				SOEs				Private Enterprises			
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Variable	Overall	Food	Textiles - Garment	Mechanics, Electronics	Overall	Food	Textiles - Garment	Mechanics, Electronics	Overall	Food	Textiles - Garment	Mechanics, Electronics
<i>Cap_intensity</i>	0.146*** (4.79)	0.105* (1.86)	0.086** (2.76)	0.070* (1.91)	0.158*** (7.69)	0.114* (2.01)	0.122*** (4.61)	0.103** (2.09)	0.156*** (3.81)	0.123** (2.1)	0.097 (1.57)	0.051 (1.08)
<i>Share</i>	0.290*** (3.05)	0.602** (2.71)	0.117 (1.69)	0.064 (1.53)	0.032 (0.91)	0.04 (0.35)	0.028 (0.42)	0.012 (0.26)	0.621*** (4.33)	0.903*** (4.19)	0.261** (2.85)	0.209 (1.48)
<i>Skill</i>	0.070*** (3.08)	0.009 (0.23)	0.062 (1.53)	0.095 (1.6)	0.096*** (4.66)	0.044 (1.19)	0.063* (2.03)	0.124 (1.64)	0.036 (1.6)	-0.016 (-0.47)	0.055 (0.78)	0.044 (0.56)
<i>Scale</i>	0.113*** (8.58)	0.077*** (2.98)	0.101*** (5.74)	0.105*** (4.31)	0.102*** (9.93)	0.075*** (4.38)	0.084*** (4.72)	0.104*** (4.88)	0.128*** (5.81)	0.057 (1.36)	0.140*** (4.98)	0.081 (1.08)
<i>Contract</i>	-0.098 (-1.44)	-0.067 (-0.58)	-0.108 (-1.18)	0 (.)	-0.139** (-2.23)	-0.145 (-0.93)	-0.098** (-2.3)	0 (.)	-0.066 (-0.55)	-0.049 (-0.41)	-0.074 (-0.28)	0 (.)
<i>Dprov</i>	0.117** (2.22)	-0.118 (-0.74)	0.147*** (3.47)	0.115 (1.52)	0.213*** (4.7)	0.083 (0.96)	0.165*** (4.18)	0.241** (2.36)	0.061 (1.32)	-0.147 (-1.46)	0.164 (1.73)	0.035 (0.32)
<i>Industry _cons</i>	estimated 0.353*** (2.65)	estimated 0.301** (2.81)	Estimated -0.049 (-0.33)	estimated 2.264*** (7.71)	Estimated 0.49*** (6.63)	estimated 0.601*** (4.26)	Estimated -0.015 (-0.1)	Estimated 1.92*** (7.03)	estimated 0.12 (0.66)	estimated 0.216** (2.11)	estimated -0.104 (-0.45)	estimated 0.349 (0.74)
<i>Number of observations</i>	9590	2865	1121	381	4297	843	738	219	5293	2022	383	162
<i>R-squared</i>	0.2291	0.3001	0.1790	0.2660	0.198	0.074	0.222	0.248	0.403	0.500	0.179	0.294

Note:

1. The dependent variable is labor productivity, calculated as values added/average labors. The variables are standardized at sample averages.
2. The values in brackets under each line are the test statistics of t-test, based on heteroskedasticity robust standard errors
3. The notations *, **, *** show the levels of significance of 10%, 5% and 1%, respectively.

Table 18: Estimation results of model on the effect of FDI on labor productivity of domestic enterprises, using the variables *sharemajor* and *sharemino*

	Domestic enterprises				SOEs				Private Enterprises			
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
	Overall	Food	Textiles, garment, footwear	Electronic, mechanics	Overall	Food	Textiles, garment, footwear	Electronics mechanics	Overall	Food	Textiles, garment, footwear	Electronics mechanics
<i>Cap_intensity</i>	0.146*** (4.72)	0.107* (1.94)	0.087** (2.78)	0.065* (2.09)	0.157*** (7.59)	0.114* (1.98)	0.125*** (4.78)	0.101* (2.02)	0.157*** (3.78)	0.120** (2.15)	0.096 (1.53)	0.044 (0.98)
<i>Sharemino</i>	0.119*** (2.9)	0.214*** (2.9)	0.065 (1.51)	0.045** (2.75)	0.021 (0.95)	0.027 (0.48)	0.05 (1.72)	0.027 (1.73)	0.236*** (4.19)	0.266*** (3.37)	0.108 (1.21)	0.115** (2.94)
<i>Sharemajor</i>	0.178*** (2.63)	0.386* (1.81)	0.075 (1.64)	0.008 (0.18)	0.016 (0.55)	0.017 (0.21)	0.014 (0.32)	-0.031 (-0.76)	0.392*** (3.66)	0.642** (2.81)	0.172** (2.86)	0.077 (0.5)
<i>Skill</i>	0.070*** (3.1)	0.011 (0.28)	0.06 (1.51)	0.096 (1.54)	0.096*** (4.7)	0.045 (1.18)	0.060* (1.98)	0.127 (1.63)	0.037 (1.64)	-0.018 (-0.57)	0.054 (0.77)	0.034 (0.38)
<i>Scale</i>	0.111*** (8.77)	0.075*** (3.08)	0.100*** (5.65)	0.106*** (4.69)	0.102*** (10)	0.075*** (4.36)	0.082*** (4.51)	0.102*** (4.86)	0.125*** (5.8)	0.064 (1.49)	0.139*** (4.87)	0.097 (1.28)
<i>Contract</i>	-0.099 (-1.44)	-0.067 (-0.57)	-0.115 (-1.23)	0 (.)	-0.142** (-2.29)	-0.146 (-0.94)	-0.111** (-2.43)	0 (.)	-0.056 (-0.47)	-0.057 (-0.47)	-0.078 (-0.28)	0 (.)
<i>Dprov</i>	0.119** (2.27)	-0.112 (-0.66)	0.149*** (3.6)	0.112 (1.62)	0.215*** (4.83)	0.088 (0.97)	0.169*** (4.37)	0.245** (2.77)	0.064 (1.36)	-0.159 (-1.44)	0.165 (1.74)	0.011 (0.12)
<i>Industry _cons</i>	estimated 0.344** (2.58)	estimated 0.294*** (3.26)	estimated -0.058 (-0.4)	estimated 2.235*** (8.55)	estimated 0.494*** (6.36)	Estimated 0.589*** (3.96)	estimated -0.032 (-0.23)	Estimated 1.970*** (7.86)	estimated 0.11 (0.61)	estimated 0.225** (2.61)	estimated -0.108 (-0.47)	estimated 0.310** (2.32)
<i>Number of observations</i>	9590	2865	1121	381	4297	843	738	219	5293	2022	383	162
<i>R-squared</i>	0.2316	0.3007	0.1799	0.2725	0.1897	0.0745	0.2248	0.2565	0.4037	0.5013	0.1790	0.3058
<i>p-value</i>	0.1125	0.1204	0.1386	0.1465	0.4440	0.9128	0.3669	0.1785	0.0529	0.0676	0.1076	0.8176

Note:

1. The dependent variable is labor productivity, calculated as values added/average labors. The variables are standardized at sample averages.
2. The values in brackets under each line are the test statistics of t-test, based on heteroskedasticity robust standard errors
3. The notations *, **, *** show the levels of significance of 10%, 5% and 1%, respectively.
4. p-value is the probability of the F-test when comparing the two variables *sharemino* and *sharemajor*.

2.3. Spillover absorptive capability of domestic enterprises

According to many quantitative research in developing countries, particularly the poor countries, the presence of spillover effects via technology acquisition also depends on the absorptive capability of the domestic firms⁸⁰. Kokko (1993) stated that the spillovers is only present when the technology gap is sufficiently small, while on the contrary, Blomstrom (1993) shows that the spillover effect is proportional to the difference in technology. Such contradictory conclusions may result from different analytical methods, as well as the specific characteristics of the industries and countries. However, they almost all agree on the emphasize and the policy meaning of the absorptive capability of domestic firm as well as the difficulty while one try to determine the capability of the firm.

To test the hypothesis of the link between spillover presence and absorptive capability in the situation of Vietnam, this section makes some estimation using the same sample data as previously. Conditional on data availability, the estimations are made on different groups of enterprises in terms of labor quality⁸¹ (which represents the ability to absorb technology), sizes of capital and labor, and geographical location. Then the section will draw out some remarks on the relationship between those factors and the spillover effects.

In methodology, assessing the absorptive power of spillover effects is based on the comparison of at least two groups of enterprises with different absorptive capability. It is represented by labor skill ratio, which is in turn measured by the ratio of skilled labors over the unskilled labors in the enterprises. This ratio is sorted in ascending order, the first quartile are named low quality labor, while fourth quartile are named high quality labor. Therefore, in this section, the concepts of low and high quality labor should be understood in relative term of the sample rather than absolute term.

The classification of enterprises in terms of sizes of capital and labor are largely based on the current criteria of GSO. However, these criteria are corrected to find more reasonable cutting points in the distribution of capital and labor.

⁸⁰ See Cave (1974); Findlay (1978), Blomstrom (1983); Aitken and Harisson (1999).

⁸¹ In quantitative analysis, the enterprises' absorptive power of technology is often reflected by the two criteria: the expenditure on R&D, and professional management and labour skills. However, due to missing information and inaccuracy in data on R&D in Vietnam, these criteria are inapplicable here.

The impact of geographical location has already been captured by *Dprove* in the models (16) and (17). This section will consider the effect of *Share* on the enterprises in different locations, specifically inside and outside large urban areas. This is done by undertaking two different estimations and then comparing them.

The estimation results based on the above specification are presented in Table 19. So as to make the results comparable to previous section, the domestic enterprises are divided into two groups - SOEs and private firms. Table 19 only presents the estimated coefficient on *Share*. Some estimations were not done as the number of observations is too small.

The results in Table 19, similar to previous finding, indicate the presence of spillover effects on private firms, particularly in textiles-garment and food processing industries. One important finding is that the private SMEs have higher signal of spillover effects, than large scale enterprises (estimations I-VIII). This is possibly due to the higher adaptability of private SMEs to changeable business environment, and therefore, the presence of FDI in the same industry fails to make them exit the market. In addition, the high labor intensity in textiles and garment industry helps to reduce competition pressures from FDI enterprises because the advantage of capital intensive technology of those foreign enterprises is not fully used.

A noteworthy point is that labor quality seems to have no impact on absorptive capability of spillovers (estimations IX – XI). Nevertheless, the absorptive capability is still higher in enterprises with higher labor skills in general and those in textiles, garment and food processing industries.

The estimations from XIII to XVI show that the private firms located outside large urban areas and industrial zones tend to better absorb spillover effects. This is, firstly, because those firms are less likely to face intra-industry competition pressures *directly* from FDI and SOEs. Moreover, as analyzed above, almost all private firms, particularly those in food processing industry, are established later than SOEs, and even later than some FDI enterprises in the same industry. Hence, these firms, on one side, participate on the competitive market, on other side, diversify their market in region where other big enterprises have not yet reach to. In other words, the FDI and private firms in the three industries are likely to be supplementary in terms of consumer markets. Secondly, the FDI

enterprises, located outside large urban areas, usually operate in specific industries or produce relying on raw material areas. Hence, their competition pressure on domestic firms may not be face to face. In some instances, the presence of FDI even creates a horizontal linkage between domestic and foreign enterprises, thereby generating positive spillover effect. Nevertheless, as the concept of “locating outside the urban area” in this paper is too broad, a complete explanation of the estimation results is impossible due to the lack of necessary information.

Table 19 also allows for more in-depth analyses of spillover effects and the absorptive capability of SOEs. In general, the spillover effect is non-existent on the SOEs, as analyzed above. However, positive spillover effect is present in SOEs with medium size of capital or small size of labor. The magnitude of such effect is, nevertheless, very small relative to that on private firms with the same size. Also, such effect is statistically significant at the 10% only. That is, at higher significance levels of 1% or 5%, the spillover effect is non-existent. This result re-confirms that the SMEs generally have higher absorptive capability of spillover effects than larger counterparts, for some reasons similar to those in case of private firms.

In fact, it may be argued that the small firms are mostly private in nature, and thus, the presence of spillover effect seems to be determined by the forms of enterprises, rather than size. The classification of enterprises in terms of both ownership and firm size allows us to conclude that the size better explains for the absorptive capability than the ownership of enterprises. This conclusion may be significant in policy making as developing the SMEs may help to maximize the benefits of FDI.

It should be noted that, apart from the lack of absorptive capability, particularly via technology diffusion and transfer, but the SOEs with low labor skills also acquire negative spillover effects of FDI enterprises in general, and of food processing industry in particular. Despite of the rapid rise in the number of private firms, the SOEs are still dominant in industrial production, particularly in manufacturing sector, in term of total output, capital etc (according to the 2001 survey, the labor shares in private and FDI enterprises are 20 percent and 22 percent, respectively, while that in SOEs is over 56 percent). Hence, low labor skills are disadvantageous for enterprises in acquiring positive spillover effects of FDI. This analytical result at micro level seems to be coincident with

the conclusion in Chapter 3 at macro level that low level of labor skills is hindering the positive effect of FDI on growth.

The estimations from XIII to XVI show that the absorptive capability of spillover effects of SOEs in urban areas as well as industrial zones is ambiguous, while the SOEs located outside those regions have higher such kind of capability. In food processing industry, SOEs in the urban area even acquires negative spillover effects, though such effect is weak. A possible reason for this, as discussed above, is that both FDI and SOEs usually concentrate in large urban areas and industrial zones. Consequently, the SOEs in such regions tend to face tougher competition pressures from FDI than those located elsewhere. In another aspect, the SOEs located outside such regions acquires positive spillover effects from FDI, yet the magnitudes of such effects are very small relative to those on private firms. Therefore, it may be concluded that the SOEs are less likely to absorb spillover effects of FDI in the same region. There is thus few evidence of the proportional relationship between the positive spillover effects of FDI and the short spatial distance, for SOEs in Vietnam. This result partly reflects the competition pressures, but also shows the lack of horizontal linkages between FDI and SOEs.

Table 19: Estimation results of spillover effects via absorptive power

		Overall	Food	Textiles, garment	Mechanics, Electronics
Capital size (million VND)		I	II	III	IV
SOEs	<500	0.055	-0.016	-0.017	0.086
	500-1000	0.078*	0.161	-0.02	-0.027
	1000-10000	-0.021	0.099	-0.038	-0.002
	>10000	0.093	0.066	0.428*	NA
Private firms	<500	0.565***	0.930***	0.196**	0.24
	500-1000	0.607***	0.863***	0.199*	NA
	1000-10000	0.587***	0.848***	0.795**	NA
	>10000	0.185	NA	-0.353	NA
Size of Labors (in persons)		V	VI	VII	VIII
SOEs	<20	0.1333	-0.023	0.233**	0.116
	20-50	0.0348*	-0.064	-0.022	0.004
	50-100	0.1088	-0.066	-0.085	0.155
	100-300	-0.30997	0.075	0.066	0.031
	>300	-0.2315	-0.044	0.058	NA
Private firms	<20	3.297***	0.793***	0.229**	0.132
	20-50	2.242***	0.821***	0.333**	0.198
	50-100	1.955***	0.626***	0.514**	NA
	100-300	-0.371	0.519**	0.125	NA
	>300	0.079	-0.044	0.058	NA
Quality of Labor		IX	X	XI	XII
SOEs	Low	-0.093**	-0.141*	-0.016	-0.057
	High	0.023	0.019	0.165	-0.015
Private firms	Low	0.254***	0.584***	0.132	NA
	High	0.515***	0.658**	0.418**	NA
Geographical Location		XIII	XIV	XV	XVI
SOEs	Inside the region	0.029	-0.087*	0.033	0.012
	Outside the region	0.088***	0.246***	0.014	-0.059
Private firms	Inside the region	0.386***	0.502*	0.198**	0.170
	Outside the region	0.678**	0.946***	0.321**	0.389*

1. The value in each cell is the estimate of the coefficient on *Share*.

2. The notations *, **, *** denote the significance levels of 10%, 5% and 1%, respectively.

3. NA (not applicable): the number of observations are too small to provide reliable results.

CHAPTER 5

CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1. Conclusions

Since the promulgation of Law on Foreign Investment, Vietnam has achieved quite impressive performance in attracting FDI inflows. Together with the magnificent GDP growth, FDI sector accounts for an increasing share in GDP. This resulted from reform policies that Vietnam has pursued for the past years, while suggesting the interrelationship between FDI and economic growth. However, to date, there has virtually been no thorough research on how FDI affects growth. Meanwhile, in-depth analyses of such topic may be useful for policy making, to maximize the benefits of FDI to Vietnam. The outcome in this book is therefore an attempt to fill that gap.

Using statistical methods, Chapter 1 shows that Vietnam's policy has been modified to create a more favorable investment and business environment for foreign investors. Nevertheless, the movements of FDI inflows and implemented FDI since 1988 generate a number of noteworthy points. In particular, although there is a signal of recovery period in 2004, since 2000 the total amount of newly registered capital has been low, in absolute terms, while it fails to exhibit a clear trend, despite of remarkable changes in FDI policy. The upward trend in implemented capital, and the tendency to fall of capital size per project show that there is currently a shift in FDI pattern. A number of explanations are possible for this. For instance, the increase in realized capital is the result of simplifying registration procedures, site clearance and establishment of infrastructure facilities for FDI enterprises. In another aspect, the fact that some investors successfully stay in business and expand their production scale in Vietnam may also explain for the rise in realized FDI. Meanwhile, the small scales of projects may result from decentralization of investment registration, or risk adverse attitudes of the investors in a changeable business environment.

Chapter 1 indicates that Vietnam's policies on foreign investment are no less favorable than other countries in the region and in the world, yet low effect and enforcement of such policies might be the reasons for decreasing registered and

implemented capital. From any perspective, the fluctuating registered FDI will have severe impact on economic growth, especially in the context of economic integration and fierce competition between many countries to attract FDI. The analytical results in Chapter 3 provide an explanation to such conclusion.

Besides, the small number of large projects is undesirable for technology transfer and knowledge diffusion. The large firms usually have technological capacity, and thus, their presence at least implies investment in production of technology-intensive capital goods. They may also generate positive spillover effects via technology and knowledge transfer to the host countries.

In a market economy, high income from high labor productivity of FDI sector is a common phenomenon. High labor productivity is often expected to generate spillover effects to other sectors in the economy, and this has in fact been confirmed in some countries. However, in the case of Vietnam, this needs to be considered carefully. The FDI enterprises tend to cluster in import-substitution industries, i.e. protected industries, and have certain market power. Therefore, the probability of spillover effects is quite limited. The concentration of FDI in protected capital-intensive industry may prevent movements of labors, particularly skilled labors, from FDI sector to domestic enterprises, or to other industries. Such movements, if any, only happen within the FDI sector. Consequently, the probability of positive spillover effects is less likely⁸².

Despite the recognition of FDI's significant contribution to economic growth and an increasing manufacturing production capacity and export turnover, the situation of operation of foreign-invested sector shows that FDI enterprises tend to concentrate on import-substitution industries, with inputs coming mainly from imports. However, the research contends that this policy is hindering the generation of spillover effects⁸³ in Vietnam, and thus undermining the effect of FDI on economic growth. This conclusion is partly verified via the quantitative analysis in Chapter 4, with the example of the firms in mechanics and electronics industry.

⁸² Besides, the wage differential between labours in FDI and the remaining sectors of the economy may also increase income inequality. However, this is not an objective of the research.

⁸³ In addition to the judgment on the small probability of generating addition employment, the competition capacity of these industries also becomes weak when Vietnam further integrates into the regional and world economy.

Using the analytical framework in Chapter 2, Chapter 3 and Chapter 4 undertake some quantitative analyses, at the macro level on the effect of FDI on economic growth via forming capital assets, and also at the micro level to test the spillover effects of FDI on enterprises. The results in Chapter 3 confirm that FDI positively affects growth in Vietnam and the magnitude of such impact goes up as Vietnam official integrates into the regional and world economy. The Research then concludes that human capital, measured by education level of labor, is not only a determinant of growth but also increases FDI contribution to growth in Vietnam. Based on the experiments with three different proxies for human capital, the Research contends that the low level of human capital or labor skills is hindering further contribution of FDI to growth. This conclusion is similar to some findings on many developing countries.

Chapter 3 also provides support to the finding that FDI capital is a supplementary, rather than a substitution, to domestic capital. This allows for the rejection of crowding out effect of FDI at capital formation. However, this does not rule out the presence of crowding out effects in particular industries or other economic sectors. The analysis of spillover effects in Chapter 4 further elaborates on those results.

The positive effects of Government expenditure on growth has been confirmed in the analysis. This result partly reflects the characteristics of economic transition, yet it may also be a drawback of the model using time series data in a short period. Nevertheless, this finding is still valuable for reference and the Research claims that increasing consumption or scale of Government may reduce the resources available for investment, which proves to be unfavorable to growth in the long run.

The authors also undertake the survey on 93 enterprises, and analyze the results with respect to 4 possible channels of generating spillover effects (labor movement, technology diffusion and transfer, production linkages and competition). The finding is that there is little evidence of positive spillover effects at micro level in surveyed industries. Further comparison indicates that the spillover effects, if any, are most likely in food processing industry, followed by textiles, garment industry. Meanwhile, the mechanics and electronics industry exhibits few signs of spillover effects. The technology gap, expressed by capital intensity and R&D expenditures, and the lack of linkage between the two sectors are the key obstacles to the presence of spillover effects in three surveyed

industries. Furthermore, due to the limitation in the statistical representativeness, the evidence and conclusion in this section may fail to completely reflect what *actually* happens in practice. Yet some of the conclusions from the survey are also supplementary to the analytical results in Chapter 4, and thus can be used for reference.

The quantitative calculation in Chapter 4 helps to determine the spillover effect at the firm level. It provides evidence to some key determinants of firms' labor productivity, such as firm sizes, labor quality, capital intensity, geographical location, with particular emphasis on the presence of FDI. Specifically, all these factors can explain for the change in labor productivity of the enterprise sector. Nevertheless, the explanatory power and the effects of those factors are different in each surveyed industry. FDI helps to increase the overall labor productivity of enterprises sector. From policy perspective, this implies that raising the number of FDI enterprises is beneficial to the growth of enterprise sector.

Besides, in terms on labor productivity, there exists a significant difference between FDI and domestic enterprises, yet the difference is non-existent among FDI enterprises with different forms of investment. Consequently, it is unnecessary to emphasize the role of joint ventures in the FDI policy of Vietnam as were done in early 1990s.

The model (17) is used for the analyzing the spillover effects of FDI at the firm level. The results show that, in general, spillover effects are present, i.e. labor productivity in domestic firm is improved with the presence of FDI in the industry. In addition, these impacts are independent of the ownership form of FDI enterprises. Again, these results restate the finding in Chapter 3 of positive effect of FDI on the whole economy.

Subsequent analyses focus on testing the presence of spillover effects in three selected industries – food processing, textiles-garment and mechanics-electronics. Then such effects are only confirmed in food processing industry. Besides, for each industry, spillover effects are only evident in private firms, whereas SOEs show ambiguous signs of such effects. This result seems unchanged when each form of foreign ownership – joint ventures, wholly foreign ownership – is considered separately

From the analysis in Chapter 4, it seems that the spillover effects are only present via production linkages (including forward and backward effects) and competition. The private firms arguably have advantages in both channels above, and hence, they have acquired positive spillover effects. Meanwhile, SOEs in manufacturing sector, with larger

scale and longer existence, are unable to do those things. It should also be noted that, a number of SOEs are able to overcome the acquired negative spillover effects, but because of some certain advantages over private firms, rather than changing their behaviors. In another aspect, it is possible that the SOEs acquire positive spillover effects via production linkage, yet these are completely offset by the negative competition effect.

Meanwhile, the absence of spillover effects via labor movement and technology transfer (between parent company and FDI subsidiaries in receiving country, as well as the direct technology transfer between FDI and domestic enterprises) is in general consistent with the conclusion in Chapter 3. That is, low labor skills are hindering the positive interaction between FDI and human capital, as well as the contribution of such interaction to growth. This conclusion is further supported by the qualitative analyses in Chapter 1 on the concentration of FDI in some industries, regions, and on the absorptive power of FDI in estimations from XIII to XVI in Table 22. At the firm level, low labor skill will limit, if not impede, technology transfer and acquisition. That is, if the lack of skilled labors is sufficiently severe, technology transfer can hardly happen. Apart from labor skills, the technology gap and productivity gap are also obstacles to the movements of skilled labors between FDI and domestic enterprises. In fact, it is more likely that labor movements are from domestic enterprises, particularly SOEs. Technology gap, at least represented by capital intensity or capital concentration per labor, also hinders technology transfer in capital-demanding industries such as mechanics and electronics. This is a possible reason why the spillover effect is almost non-existent, or very weak if any, in such industries.

The research outcome also shows that the spillover effects of FDI in Vietnam seem to be more dependent upon the size than the legal form of the domestic enterprises. A noteworthy point is that the spillover effect is verified in the enterprises with small and medium sizes of labor and capital. The operations of FDI enterprise also create spillovers to domestic ones especially those located in less FDI density region. This conclusion reaffirms the argument about the two channels that spillovers seems to be more likely to occur: production linkage and competition. However, one should interpret this result with caution due to limitation in data used.

Such above conclusion, more or less, provides support for the policy of SMEs promotion due to the flexibility characteristics of those enterprises in the changeable business condition in Vietnam.

5.2. Policy implications

1. Continuously reform the ideology and approach in preparing strategy to attract FDI inflows in coming years.

Apart from the recognition of FDI as a sector in the economy, it should be stressed that further integration and WTO accession also depend upon whether Vietnam can attract more FDI, and whether Vietnam is sufficiently attractive for long term investment. Thus, the FDI policies should take into account the globalization context. They also need to be formulated based on clear medium- and long- term targets of FDI attraction, so that the solutions can be combined and support each other. For instance, horizontal FDI attraction should be continued in the coming years. However, in the long term, Vietnam should improve its capacity, such as business environment, labor skills, R&D capacity, etc., to attract large investors. This target requires immediate actions.

The foreign investment policy in the coming years should still focus on the quantity of capital, with greater emphasis on positive spillover effects of FDI, particularly via the four channels as analyzed in the Research.

Necessary measures are also required to further promote investment in foreign and domestic markets; to facilitate information exchange between domestic investors and those overseas, as well as between investors and government's related agencies.

2. Improving the investment environment and raising Vietnam's attractiveness to foreign investors to compete for FDI inflows.

The competition for FDI is becoming tougher in globalization context. Meanwhile, Vietnam's investment environment is currently less competitive than other countries in the region⁸⁴. Therefore, improving the investment environment is beneficial. As the primary goal of foreign investors is to exploit profits, lowering business and investment costs and making the environment more favorable will promote further FDI inflows. For the host country, employment, technology transfer and long term investment from foreign investors

are also the objectives for improving investment environment. On that ground, the policies should focus on three issues:

- To create a level playing ground for all types of enterprises. Discriminatory treatments to enterprises should be phased out quickly so as to minimize the risks due to policy amendment, macroeconomic instability, weak contract enforcement, etc. Also, simplifying market entry procedures, and facilitating market exit with minimal transaction and opportunity costs are necessary to minimize the barriers to competition. The competition policies, particularly the Competition Law in effect since July 1, 2005, should be quickly enforced, to replace the current excessive protection policies.

- Quickly improve the markets for factors of productions, particularly markets for capital, labor, and real estate. This will provide the foreign investors with easier access to and more flexible use of factors of production regarding price, space and time. Otherwise, the underdevelopment of those markets in Vietnam become a severe weakness as it increases the production costs and hinder the ability to capture business opportunities of foreign investors.

- Step up the administrative reform, together with the decentralization of State management in general and investment management in particular to local government. In addition, the responsibility of each individual should be clearly determined and evaluated on the basis of benefits to the whole society. That is, decentralization should enable governments of each level to actively make decisions within their jurisdiction, as well as to evaluate the actual consequences of such decisions, regarding employment creation, increase in production values and added values to local area, etc., after the projects commence. The local policy to quickly improve the capacity of the staff is also required.

3. Create good conditions for positive spillover effects of FDI and increase the domestic enterprises' absorptive capability of such effects.

- Instead of encouraging FDI to some certain industries, it is advisable to stipulate the list of foreign-investment-prohibited industries, and allow investment in the others. Further equitization of SOEs should be promoted, while better market access in some

⁸⁴ In the opinion of the Research group, the level of improvement should be compared with those in other countries, rather than with the previous level of its own.

industries, which are mainly dominated by SOEs, should be provided to foreign-invested enterprises and non-SOEs. In addition, the commitment to reduction of tariff and non-tariff barriers should be implemented for effective integration and trade liberalization. This will generate competition pressures to all enterprises and minimize the protection level in some favored industries. The aim of these measures is to reduce the concentration of FDI in some import-substitution industries, to attract FDI inflows to all industries, thereby generating spillover effects to domestic enterprises as well as the economy.

- Decentralize the granting of investment license and increase the project scale that each corresponding government level, particularly in the provinces outside large industrial centers or outside large cities, is authorized to decide. This measure may have immediate effects on the scales of projects and the growth in realized capital, while stimulating the process of administrative reform, especially in provinces/cities. As mentioned above, this decentralization should be attached to individual responsibility and evaluated via the actual socio-economic efficiency of the projects.

- Reduce the concentration of FDI in large industrial centers and large urban areas by encouraging FDI inflows to other regions. Together with decentralization, the government should support the provinces in promoting investment, training human resources to meet the demand for skilled workers and managerial labors. In the coming years, the advantage will belong to the neighboring provinces of FDI-concentrated centers. Building infrastructure facilities, therefore, may give more priority to such provinces, to establish a belt surrounding large cities so that the FDI enterprises may expand their activities with respect to geographical location.

- As evidenced in the quantitative analysis, FDI have positive spillover effects on SMEs, including the SOEs. Hence, the policies should aim further at developing SMEs, and support these enterprises in establishing intra-industry production linkages with other FDI counterparts in the same industry. Government's assistance is also necessary in improving the capacity of those SMEs, so that they can benefit from the diffusion of new technology. The commonly used measures are to provide information, at zero or very low costs, to the SMEs; to organize the meetings for direct discussion between enterprises; to organize training classes for the staff in those firms.

- Increase the R&D capacity of domestic firms, so as to improve the absorptive capability of new technology and to promote technology transfer. This can be done via government-funded programs for specialist exchange between research institutes, universities, etc. and enterprises, or via research on new products, new industries where the participants share the sponsorship and benefits.
- Quickly increase the rate of trained labors in the economy, particularly in domestic enterprises, to improve the absorptive capability of new scientific and technological advances.

4. Carry out some effective measures to attract large multinational corporations with technological capacity, and to make the most use of R&D advantage of foreign firms in Vietnam.

- Quickly reform the government's R&D organizations, particularly with respect to human resources, to ensure absorptive capability of new knowledge and technological advances;
- Continuously update, analyze and process information regarding large companies, particularly those with strong R&D capacity. In addition, strategies/plans should be prepared for technology transfer, areas of operation and technology renovation of those companies. This task should be given to a certain agency for systematic monitor and analysis, though other concerned institutions/enterprises are also encouraged. Besides, the experience of other countries in attracting foreign firms with technological advantage need to be analyzed to draw out some relevant lessons.
- Quickly enforce the Law on Intellectual Property Rights, and effectively implement the commitments on intellectual property rights, and copyright protection, in accordance with international practice.
- To attract large enterprises and promote technology transfer, apart from a credible investment environment, the government should also have preferential treatment to investors. However, such preferential treatment should be given to some industries which meet necessary conditions, rather than to a large number of industries. The government needs to ensure the effective implementation of those preferential policies, to minimize the related transaction costs. Possible measures include the preferential treatments in tax,

infrastructure facilities (such as land and providing services of infrastructure facilities), labor (such as personal income tax).

- Carefully check and evaluate the policies related to technology transfer in the past years, to draw out some lessons on the success and failures. Despite of a number of policies to encourage technology transfer, Vietnam only achieve some limited results. This implies that those policies fail to match current situation. Hence, more research surveys need to be conducted for deeper and more specific analysis on those policies in practice.

In short, to maximize the benefits of FDI, a broad, harmonized approach is required in establishing policies on foreign direct investment. Apart from the focus on FDI attraction, the policies in the coming years should also attach more importance to the positive spillover effects of FDI. The contents in this Research help to elaborate on that approach, and provide some basis to achieve the above-mentioned target.

The above recommendations, however, only focus on positive spillover effects of FDI on growth. Thus, it is only useful to the extent of reference in preparing policies. Besides, the quantitative analysis on spillover effects is only based on cross-sectional data, which partly limits the Research results. The supplementary assessments such as via questionnaire survey are only of small scale, with low level of representativeness. These drawbacks, nevertheless, have raised some issues for further and broader research in the future.

APPENDIX: LIST OF VARIABLES USED IN THE ESTIMATIONS

<i>Variable</i>	<i>Content</i>
<i>Cap intensity</i>	Capital intensity, calculated as value of capital/labor
<i>Sharemino</i>	Labor share of FDI enterprises, in form of joint ventures, in total labors of 4-digit sub-industries
<i>Sharemajor</i>	Labor share of wholly owned FDI enterprises in total labors of 3-digit sub-industries
<i>Share</i>	Labor share of FDI enterprises in total labors of 4-digit sub-industries
<i>Skill</i>	Labor skills, measured by the proportion of labor finishing at least junior schools and vocational training relative to the rest
<i>Scale</i>	Scale of enterprise' revenue, = enterprise' revenue/total revenue of 4-digit sub-industry.
<i>Contract</i>	Dummy variable, = 1 if the firm has any relationship with a foreign partner, = 0 otherwise
<i>Dprov</i>	Dummy variable, = 1 if the firm is located in highly FDI-concentrated provinces, = 0 otherwise
<i>DIndustry</i>	Dummy variables for 22 2-digit sub-industries.
<i>Dos</i>	Dummy variable, = 1 if enterprise is foreign-invested, = 0 otherwise.
<i>Major</i>	Dummy variable, = 1 if enterprise is wholly foreign owned, = 0 otherwise
<i>Mino</i>	Dummy variable, = 1 if the enterprise is a joint venture, = 0 otherwise
<i>Dfood</i>	Dummy variable, = 1 if the firm operates in food processing industry, = 0 otherwise
<i>Dtext</i>	Dummy variable, = 1 if the firm operates in textiles - garment industry, = 0 otherwise
<i>DElec</i>	Dummy variable, = 1 if the firm operates in mechanics - electronics industry, =0 otherwise
<i>HS</i>	Human capital, proportion of labors finishing high school
<i>HBC</i>	Human capital, rate of literacy
<i>HP</i>	Human capital, proportion of labors finishing primary school
<i>GOVC</i>	Permanent expenditure from the Budget
<i>GOVI</i>	State Budget for development
<i>FDI</i>	Ratio of implemented FDI over GDP
<i>DIN</i>	Economic integration, dummy variable, = 1 from the third quarter of 1995 onwards, = 0 otherwise
<i>GDPPC</i>	GDP per capital
<i>I</i>	Gross National Investment relative to GDP
<i>Productivity</i>	Firm's labor productivity, = value added per labor

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