THE IMPACT OF FOREIGN DIRECT INVESTMENT AND OPENNESS ON VIETNAMESE ECONOMY

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Abstract

This thesis examines the impact of foreign direct investment (FDI) on Vietnamese economy based on Partial Adjustment Model and time series data from 1976 to 2004. FDI is shown to have not only short run but also long run effect on gross domestic product (GDP) of Vietnam. However, elasticity of GDP with respect to FDI is small and it will take many years to fully manifest itself. The impact of trade openness on GDP has also been examined and it is shown to be stronger than that of FDI. The paper offers a number of explanations and discusses briefly suggestions in order to increase the contribution of FDI to Vietnam’s economic development.

Key words: foreign direct investment, trade openness, partial adjustment model, Vietnam.
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1. Introduction

Foreign direct investment has emerged as the most important source of external resources flows to developing countries over the 1990s, and has become a significant part of capital formation in the country, etc. (Kumar and Pradhan, 2002, p.3).

Many emerging economies have dramatically reduced barriers to foreign direct investment and countries at all levels of development have created a policy infrastructure to attract multinational firms (Hanson 2001, p.1).

Vietnam, like many other developing countries, aims at increasing the role of foreign direct investment (FDI) in its development through attracting more FDI. For nearly two decades since the opening of the country to the world in 1986, one of the centrepieces of Vietnam strategy for economic development has been to increase FDI. Vietnamese authorities have created an attractive climate for FDI, including the promulgation of FDI law in late 1987, and following up with several times revised law on FDI subjected to investor’s suggestions.

In order to evaluate the contribution of FDI to Vietnamese economy, this thesis attempts to investigate FDI’s effect on gross domestic product (GDP) of Vietnam based on data from 1976-2004. The findings of this paper may be served as recommendations for policy makers to improve their assessments of the influence of FDI on the development of the country. Currently, there are a large number of researches on the links between FDI and GDP. Basu et.al (2003) finds that there are short run and long run relationships between FDI and GDP for twenty three developing countries. Other researchers, Hansen and Rand (2004) conclude that FDI has a lasting effect on GDP. However, little research has been done on the links between FDI and GDP in Vietnam. This paper tries to fill the gap by using annual time series data for Vietnam and a Partial Adjustment Model to explore the impacts of FDI on GDP.

It is believed that FDI goes together with the trade openness (OPEN) of a country. Country can expect more FDI by being more OPEN (Kandiero and Chitiga(2003)). Therefore, in the empirical analysis OPEN is added as an additional explanatory
variable to explain more about the impact of FDI on GDP, in which OPEN measured as export share of GDP.

The next section presents a brief overview of FDI in Vietnam in the past three decades, the overview first provides general picture of FDI in Vietnam then it describes four phases of FDI. Starting from nearly zero from years before 1986, FDI inflows into Vietnam are increasing when the country enters the world market in 1986 and rocketing in 1992 to 1996 then slowing down since 1997 and recovers in 2001. Special characteristics of FDI in Vietnam are also highlighted in this section.

Section three provides motives for an investor to invest abroad and explanations why developing countries compete with each other in attracting FDI. In section four, the empirical estimation of FDI and OPEN impacts on GDP are presented. Method applies to investigate the empirical estimation is the regression analysis in general and the Partial Adjustment Model in particular. It is expected that FDI and OPEN have positive effects on GDP. The results show that FDI and OPEN in Vietnam are enhancing GDP for both short and long run. The final section draws conclusions, policy implications and actions needed to realise the country’s considerable FDI potential.
2. Overview of Vietnam foreign direct investment:

Vietnam has many attractions to foreign investors, with appropriate policies, can be turned into opportunities. As seen from table 1, Vietnam has abundant natural resources named in Vietnamese as “golden forest and silver sea”, including valuable resources such as oil, unexplored minerals in the sea; biological resources of its vast tropical forest, etc. Vietnam’s climate makes many of these resources particularly attractive, permitting several crops per year, as well as high quality agricultural and fishing products. Vietnam is now a major exporter of food and seafood in the world. Besides, people are Vietnam's greatest natural resource. The well educated workforce with a literacy rate of 93 percent has been competitive with wage productivity ratios comparing with those of neighbouring countries. Moreover, Vietnam also has a favourable access to large regional and international markets including Association of South East Asian Nation (ASEAN), Asian Free Trade Area (AFTA), the United States, and European Union for export products.

Vietnam’s potential attractiveness to foreign investors is strong. First, with an expected average annual GDP growth of 7.5 percent for year 2004-2007 (Asian Development Bank, 2005), Vietnam is one of the fastest growing economies in the world. Second, the liberalization of FDI policies is still under way. Some untapped potential industries that had been limited to foreign investors including telecommunication, banking, air transportation, power generation and distribution, etc are gradually being opened. Third, there is also a significant potential for FDI participant in infrastructure. Several B.O.T projects have been concluded such as building a new bridge over Saigon River, new B.O.Ts are waiting for investors such as building new airport in suburb of Ho Chi Minh City. Finally, one strong piece of evidence to believe that Vietnam has great potential to invest in is the presences of almost all multinational companies from United States, European, and Japan in Vietnam.
Table 1: Major macro economic indicators (2004)

<table>
<thead>
<tr>
<th>Indicator (year 2004)</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Area (square km)</td>
<td>331.69</td>
</tr>
<tr>
<td>Population (million people)</td>
<td>81.37</td>
</tr>
<tr>
<td>Literacy(%)</td>
<td>93.00</td>
</tr>
<tr>
<td>Gross domestic product-GDP ($million)</td>
<td>43,891.00</td>
</tr>
<tr>
<td>GDP growth (percent)</td>
<td>7.50</td>
</tr>
<tr>
<td>GDP per capita ($)</td>
<td>552.90</td>
</tr>
<tr>
<td>Inflation (percent)</td>
<td>7.70</td>
</tr>
<tr>
<td>Natural resources</td>
<td>Oil, gas, coal, iron, forest and sea’s resources</td>
</tr>
<tr>
<td>Unemployment(%)</td>
<td>5.60</td>
</tr>
<tr>
<td>Export($billion)</td>
<td>26.50</td>
</tr>
<tr>
<td>Principle export commodity</td>
<td>Crude oil, rice, garment, marine products, coffee</td>
</tr>
<tr>
<td>Import($billion)</td>
<td>31.90</td>
</tr>
<tr>
<td>Principle import commodity</td>
<td>Petroleum products, machinery, steel product, fertilizers</td>
</tr>
</tbody>
</table>

Source: Asian Development Bank, 2005 and Vietnam general statistic office, 2005

Vietnam officially opened its doors to the world in late 1986 with the economic transition toward a market economy named in Vietnamese as “doi moi” (renovation). The process is aimed at restructuring Vietnam's agriculture, business, investment, foreign trade apparatus and constructing a market economy with socialist characteristics under state management (Le and Le (2000), Jenkins (2004)). Applying appropriate policy framework, Vietnam has attracted international attention especially that of foreign investors. From 1988 till the end of 2004, Vietnam authorities had approved the establishment of over 6,120 foreign invested enterprises involving $ 47,861.20 million in foreign capital (see table 5 in appendix A1).

Foreign investors are generally free to choose their modes of entry into Vietnam, such as business corporation contracts, joint ventures, 100 percent foreign owned companies and build operate transfers (B.O.T). However, in early years of opening its market door, the majorities of FDI flows into Vietnam have been joint ventures between foreign partners and state owned enterprises, which the latter usually contributes twenty to
thirty percent of the values of the joint ventures in term of values of land. Most of these early investments are capital intensive, entered in oil-related production, heavy industry and real estate (building offices for lease). The explanation comes from Vietnam’s high barriers to these industries which not only protect state owned enterprises but also attract multinational companies to establish their productions in local plants as joint-ventures.

The ratio of 100 percent foreign owned companies have been growing in recent years. In the first four months of 2005, there are 121 new register projects of which 100 percent foreign owned projects made up 72.8 percent, joint venture projects have 23.6 percent, the rests are B.O.Ts(Tran, 2005).

FDI in Vietnam has been active in various industries. Figure 1 depicts the industrial patterns of FDI in 2004, as the heavy industry sector leading all other sectors in influencing the economy accounts for 32.84 percent of total FDI. The light industry sector follows with 27.54 percent and the service sector accounts for 6.63 percent of total FDI. The share of these sectors in 2002 respectively is: 28, 25, and 6 percent (Le 2002, p.4). The share of FDI flowing into heavy industry is still high; however, the light industry and service sectors have shown increasing tendency in recent years, Vietnam is moving toward service and light industry with labour intensive foreign investment.

![Figure 1: Number of projects by sectors in 2004](source: Vietnam general statistic office, 2005)
FDI has experienced four phases in Vietnam namely 1975-1986, 1987-1996, 1997-2000, and 2001-2004. Phase 1 started in 1975 when the country was reunified after years of division until 1986 the year before “Doi Moi”. Vietnam was heavily dependent on Soviet Union aids and was isolated from most countries in the world, even with the neighbouring countries in South East Asia. At this phase, Soviet Union had invested to build some heavy industries such as constructing dam, hydro electric station, railway, etc. However, the foreign private capital was generally not permitted into the country.

Phase 2 was the initial stage of foreign investment, starting with the promulgation of the law on foreign investment in late 1987. Vietnam had the boom in FDI, number of projects and committed investment increased rapidly during period 1990-1995 (table 2). Especially committed investments are very high for two years 1995 and 1996 (see table 5 in appendix A1).

Table 2: Actual value of FDI in Vietnam, selected years from 1988-2004 in millions of dollars (see table 5 in appendix A1 for more details)

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Projects</th>
<th>Total Registered Capital ($million)</th>
<th>Legal Capital ($million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>108</td>
<td>735.00</td>
<td>407.50</td>
</tr>
<tr>
<td>1995</td>
<td>408</td>
<td>6,848.00</td>
<td>3,157.00</td>
</tr>
<tr>
<td>2000</td>
<td>389</td>
<td>2,018.00</td>
<td>1,625.00</td>
</tr>
<tr>
<td>2004</td>
<td>679</td>
<td>2,804.40</td>
<td>985.65</td>
</tr>
</tbody>
</table>


In Phase 3, the initial boom ended in 1997. FDI had declined since 1997. There are several factors explaining the declining in FDI. Outside impacts are the Asian financial crisis in 1997-1998 which creates financial difficulties for foreign investors to invest in Vietnam, and the increasing FDI inflows into China. However, the main explanations are stressed on the inside impacts that are the unattractive investment environments such as bureaucracy, high costs, dual price system between foreign enterprises and domestic companies.

In recognition of negative reactions of foreign investors to the worsening of the investment climate, Vietnam’s government issued several amendments to the
investment law. Sets of commercial laws and regulations were passed to improve the legal framework and policy in which foreign businesses operated. The improved investment environment promoted a quick recover of FDI after 1998. Number of projects steadily increased after 1998. But the picture of FDI was still not bright.

During phase 4, Vietnam has continuously done numbers of reforms in the investment law. Government issued an amendment to the investment law for the fourth time in June 2000, reducing the telephone, fax, internet fees, and transportation costs. In 2003, Vietnam authorities simplified the investment license issuing procedures; corporate income tax for foreign investment enterprises who invested in industrial zones was reduced to only 10-15 percent from 30 percent tax rate (KPMG, 2003). Lately, foreign investment enterprises have agreed to join local stock exchange market.

As a result, since 2001, foreign investment in Vietnam has entered a new stage of adjustment and consolidation. Investment environment is improving regularly, the number of projects increase every year, although the committed capitals are not high because, as noted above, FDI inflows to light industry and services are increasing.

Foreign investment enterprises in Vietnam have diverse sources. Figure 2 depicts the top ten countries and regions that invested in Vietnam as of April 22, 2005. The top ten sources together constitute over 77 percent of the license projects and 81 percent of committed capital in Vietnam. Among them, Singapore took the lead in direct investment in Vietnam contributing 347 projects with $8.1 billion. It was followed by Taiwan, Japan, South Korea and Hong Kong.

These top five investors have invested total committed capital of $29.5 billion. Following next big five investors are British Virgin Islands, France, Netherlands, Thailand and Malaysia.
Figure 2: Top ten countries and regions accumulated investment in Vietnam as of April 22, 2005
Source: Vietnam investment review, 2005

Interestingly, as seen from the table 3, Asian developing country investments are highest in FDI to Vietnam. They collectively counted for about 58.54 percent of total actual accumulated FDI in Vietnam as of 22 April 2005. Whereas their counter parts from Japan, Europe, United State, Australia and New Zealand accounted for only 41.46 percent. The amount of FDI by April 22 of 2005 also suggests that FDI in Vietnam launched by developing country businesses have been much higher than those of developed country firms over the last 20 years.

Table 3: Foreign direct accumulated investment by regions as of April 22, 2005

<table>
<thead>
<tr>
<th>Country and region</th>
<th>Registered capital ($million)</th>
<th>Percent of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian except Japan</td>
<td>28,062.69</td>
<td>58.54</td>
</tr>
<tr>
<td>Europe</td>
<td>11,790.56</td>
<td>24.60</td>
</tr>
<tr>
<td>Japan</td>
<td>5,794.82</td>
<td>12.09</td>
</tr>
<tr>
<td>The United States</td>
<td>1,304.09</td>
<td>2.72</td>
</tr>
<tr>
<td>Australia and New Zealand</td>
<td>703.07</td>
<td>1.47</td>
</tr>
<tr>
<td>Other</td>
<td>281.73</td>
<td>0.59</td>
</tr>
<tr>
<td>Total</td>
<td>47,936.96</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Vietnam investment review, 2005
Asian developing countries are leading in FDI in Vietnam, however the average size of those sources are small, as they usually invest in labour intensive and light industrial or textile goods projects for export. Japan, Europe, and United States firms on the other hand, invest in technology manufacturing sectors which aim to exploit domestic market. The car producing industry can be a typical example: Toyota, Mercedes Benz and Ford have established manufactures in Vietnam.

FDI in Vietnam occurs throughout the country. FDI has been presented in almost every provinces of Vietnam in the recent years. However, FDI flows are unevenly distributed into some specific rich provinces in the north and the south of the country. The provinces listed in table 4 have received 77.47 percent of FDI, especially Hanoi, capital of Vietnam, and Ho Chi Minh, biggest city in Vietnam; together have received 43.1 percent of the FDI inflows, while other provinces received fewer FDI.

**Table 4**: Approved FDI projects (accumulated) by selected provinces as of 22 April 2005

<table>
<thead>
<tr>
<th>Province</th>
<th>Registered capital (Smillion)</th>
<th>Percentage of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Provinces</td>
<td>47,936.96</td>
<td>100.00</td>
</tr>
<tr>
<td>1) Ho Chi Minh</td>
<td>11,677.63</td>
<td>24.36</td>
</tr>
<tr>
<td>2) Ha Noi</td>
<td>8,984.21</td>
<td>18.74</td>
</tr>
<tr>
<td>3) Dong Nai</td>
<td>7,984.23</td>
<td>16.66</td>
</tr>
<tr>
<td>4) Binh Duong</td>
<td>4,454.97</td>
<td>9.29</td>
</tr>
<tr>
<td>5) Vung Tau</td>
<td>2,169.38</td>
<td>4.53</td>
</tr>
<tr>
<td>6) Hai Phong</td>
<td>1,868.61</td>
<td>3.90</td>
</tr>
<tr>
<td><strong>Total (1-6):</strong></td>
<td><strong>77.47</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Vietnam investment review, 2005
There are a number of international organizations and individual researchers that offer definition of FDI. One of the well cited FDI definition is given by International Monetary Fund:

*FDI is the category of international investment that reflects the objective of a resident entity in one economy obtaining a lasting interest in an enterprise resident in another economy. The lasting interest implies the existence of a long term relationship between the direct investor and the enterprise and a significant degree of influence by the investor on the management of the enterprise. (IMF, 1993)*

The definition specially stresses the lasting interest of the direct investor. The lasting interest determines whether a firm should establish production facilities abroad rather than export its product or licence overseas companies to produce instead. A common explanation for the lasting interest is that foreign investment enterprises goes abroad to raise its total profit, because of lower labour costs. However, there are couples of reasons which determine the firm to venture overseas; the determinant can be explained from macro-level, which includes theories of imperialism economic that stresses the necessity of capital export in order to benefit from low wage, political dominant from foreign countries. It can also be explained from micro-level theory concerning intangible assets belonged to firms such as advance technology knowledge, marketing assets, research and development, which may also be exploited to even greater advantage by investing abroad. The decision to venture abroad can be resulted of transaction cost, or due to barriers to entry such as tariff, capital cost barriers from host countries. There is also another theory which explains FDI in rather different terms, that is oligopolistic rivalry between firms at the global level. Firms build up overseas representatives in order to stop potential rivals from entering any specific market or markets.

Figure 4 in appendix A2 depicts the most important factors behind the FDI inflow into a country. Those are economic factors, government policies, and trans-national
corporation (TNC) strategies. An FDI decision comes from both sides: host country offers attractive conditions and the TNC is willing to invest.

There are negative effects of FDI on one country such as the foreign investment enterprises with strong capital ability will compete and swallow domestic companies. Foreign investment enterprises can exploit the host country labours and natural resources as some policy makers in developing countries consider inward FDI as “imperial in disguise”. FDI, however, can benefit the host economy in many ways

*Foreign direct investment (FDI) has the potential to generate employment, raise productivity, transfer skills and technology, enhance exports and contribute to the long-term economic development of the world’s developing countries. (UNCTAD, 2005a)*

Foreign investment enterprises have generated significant employment in developing countries through their investment in export-oriented and labour intensive industries. Employees in foreign investment enterprises typically earn higher salaries than those working in local firms. The reason can be explained from the size of foreign investment enterprises and their requirements of job quality. World Bank had a national survey of enterprises in Vietnam in 2001-2003, and found that workers in foreign investment enterprises earned nearly 2 million Vietnam Dong($130) a month, while other workers earned less than 1 million Vietnam Dong($65) a month, (World Bank, 2003).

More importantly, foreign investment enterprises tend to provide employees with the opportunities to acquire additional knowledge and skills. The trans-national structure and large size and scope of many foreign investment enterprises are potential for development of skills and knowledge for their employees. Slaughter (2002) finds a strong positive correlation between skills upgrading in developing countries and the presences of United State invested firms.

As most developing countries have low saving rates, foreign capital is a vital source of finance. By using existing resources more efficiently or absorbing unemployed resources, capital from abroad can increase a country's output and productivity. Evidence from ministry of planning and investment of Vietnam shows that FDI has

Perhaps one of the most important contributions that developing countries desire from FDI is in the area of technology. Since, developing countries are considered lagging behind developed countries in advance technology. Makki and Somwaru (2004, p.800) provide evidences on the endogenous technology spillover through FDI. According to them, FDI is often the main channel through which advance technologies are transferred to developing countries. Using cross section data from G7 countries, Hejazi and Safarian (1999) also find that FDI and multinational enterprises are important channels of technological spillovers.

FDI can also make a positive contribution to development of developing countries through expanding export. As being a multinational firm, foreign investment enterprise finds it easy to penetrate the overseas market, the task at which the local firms can not be compared. The presences of export processing zones in almost all developing countries prove the importance of FDI in enhancing export in developing countries.

Foreign investment enterprises’ effects on the host country rate of economic growth might seem to provide the ultimate concerns from economists. There are a lot of empirical literatures dealing with the relationship between FDI and economic growth. There exist some literatures indicating a very little link between FDI and economic growth. Alfaro et al. (2003) use cross country data from 1975-1995 and show that FDI alone plays an ambiguous role in the contribution to the economic growth, the explanations emphasize on domestic financial market. They believe that the undeveloped of local financial market in particular can adversely limit an economy’s ability to take advantage of FDI’s benefits.

However, the vast empirical studies tend to affirm the importance of FDI for the economic growth, some recent examples of case studies are: Fan and Dickie (2000 ) for five Asian countries Thailand, Malaysia, Indonesia, Philippine, Singapore, Srivastava and Sen (2004) for India, Obwona (2001) for Uganda. There also exist multi country studies based on cross section or panel data econometric methods. These studies also
come to conclusion that FDI has made a positive contribution to growth, such as Makki and Somwaru (2004), Ram and Zhang (2002).

There is a growing descriptive literature of FDI in Vietnam (Dollar 2002, Le 2002, Pham 2003, Le 2004, etc). Pham (2002) studies the economic impact of FDI on Vietnam from 1988 to 1998. His conclusions are FDI increases the domestic saving and investment, accumulates the foreign exchange stock, contributes to government budget, and FDI is also a major source of modern technology transfer, which altogether promotes the economic growth. Le (2002, p.3) also asserts that FDI plays a very important role in Vietnamese economy. FDI companies contribute 13.3 percent of GDP, 35 percent of industrial output, and account for 23 percent of export in the year 2001. Another author who has the same first name with the previous author Le, Le (2004) stresses the impacts of FDI on labour wages. He argues that labours in foreign investment enterprises get increasing wages in period 1997-2001.

It is widely recognised that FDI is one of the key aspects of Vietnamese economy after the reform in 1986, as Dollar(2002, p.10) points out “flow of FDI averaged more than 5% of GDP in the second haft of 1990s up from virtually zero in 1980s”.
4. Empirical Analysis

4.1 Econometric model

In order to investigate the impact of FDI on Vietnamese economy, it is necessary to specify and estimate a model linking them together. Based on Vietnam situation and availability of data, the model with three variables FDI, GDP and OPEN is specified and estimated, in which GDP is a measure of Vietnamese economy and OPEN is an additional variable to explain more for the model. OPEN is measured as export share of GDP (export/ GDP).

When the FDI and OPEN increase we expect that GDP also increases. It is believed that FDI and OPEN have positive impacts on GDP; however, the impacts are probably not only immediate but also long lasting. For that reason, I choose the dynamic model to interpret the relationship between GDP, FDI and OPEN.

In my model, GDP denotes gross domestic product, FDI denotes the foreign direct invest inward inflow into Vietnam, OPEN denotes trade openness of Vietnam, and lnGDP, lnFDI, lnOPEN respectively denote the log of GDP, FDI and OPEN.

According to the Partial Adjustment Model (Gujarati, 2003, p.673), I assume that the long run lnGDP* is a linear function of lnFDI, and lnOPEN. Using the subscript \( t \) to describe the three variables in year \( t \), and the random error term \( e_t \), the long run function can be written as

\[
\ln G(DP) = \beta_0 + \beta_1 \ln FDI_t + \beta_2 \ln OPEN_t + e_t \tag{4.1.1}
\]

Equation (4.1.1) is for desired level of GDP or long run GDP. In order to observe the long run GDP, we will estimate the short run at first, then the long run movement of GDP can be concluded through the coefficient of adjustment \( \delta \), where \( 0 < \delta \leq 1 \). Setting up the hypothesis known as the partial adjustment, we have

\[
\ln GDP_t - \ln GDP_{t-1} = \delta (\ln GDP_t^* - \ln GDP_{t-1}) \tag{4.1.2}
\]
We want to test how GDP responds to FDI and OPEN with a lapse of time therefore the value of adjustment $\delta$ is expected to lie between 0 and 1. Rearranging equation 4.1.2, we get

$$\ln GDP_t = \delta \ln GDP_t^* + (1 - \delta) \ln GDP_{t-1}$$  \hspace{1cm} (4.1.3)

Substituting 4.1.1 into 4.1.3, gives

$$\ln GDP_t = \delta (\beta_0 + \beta_1 \ln FDI_t + \beta_2 \ln OPEN_t + \epsilon_t) + (1 - \delta) \ln GDP_{t-1}$$

Rearranging, one obtains

$$\ln GDP_t = \delta \beta_0 + \delta \beta_1 \ln FDI_t + \delta \beta_2 \ln OPEN_t + (1 - \delta) \ln GDP_{t-1} + \delta \epsilon_t$$  \hspace{1cm} (4.1.4)

The parameter $\delta \beta_0$, $\delta \beta_1$, $\delta \beta_2$ and $1-\delta$ can be estimated by regressing $\ln GDP_t$ on $\ln FDI_t$, $\ln OPEN_t$ and $\ln GDP_{t-1}$. The model relates $\ln GDP$ to the current value of $\ln FDI$, $\ln OPEN$ and the lagged value of its self. The short run impacts of FDI and OPEN on GDP are respectively the coefficients $\delta \beta_1$ and $\delta \beta_2$. The long run effects are given by parameter $\beta_1$, $\beta_2$.

4.2 Data

Data used in my paper are annual data for the period 1976-2004. Data on real GDP from 1980 to 2004 are from International Monetary Fund, world economic outlook data base, (IMF, 2005). Because there are limit of statistical reports in Vietnam for year 1976-79, I use the econometric method of replacing missing values to fulfil values of GDP for those years. I input a value for year 1976 and fill the rest with linear interpolation. Data for FDI in Vietnam are from United Nations Conference on Trade and Development (UNCTAD, 2005b), foreign direct investment data base, and data are available from 1976 to 2003. Figure of 2004 is from Vietnam economic and forecast no 1/2005. Vietnam’s export data for OPEN variable are from Vietnam general statistic office.

GDP figures are in billion Vietnam Dong of 1994 price, while figures of FDI and export are in million U.S. dollars. To achieve consistency, GDP data were converted to dollars in 1994 price. In addition export figures from 1976 to 1994 are U.S. dollars plus Soviet
Union rubbles ($+Rub), I have converted these figures into dollars using the exchange rate that was used in Vietnam in those days one US dollar was equal one Soviet Union rubble.

There are four years 1976, 1977, 1979 and 85, data on FDI flows are in negative sizes, because UNCTAD counted FDI data on net basis (UNCTAD, 2005c), which means capital credits minus capital debits, capital debits occurred when there are reverse investment or disinvestment. To avoid taking log at negative values, I use the transformation (1+negative value) then taking log.

Figure 3 depicts the behaviour of GDP, FDI, and OPEN in 1976-2004. The graph suggests that there is positive association between OPEN and GDP; FDI almost has positive relationship with GDP, except for periods when the values of FDI turn negative signs.

Figure 3: FDI, OPEN, and GDP
Source: Author’s calculation based on data from IMF, UNCTAD and Vietnam general statistic office.
4.3 Regression analysis

Given the first experience about the movement of the variables, I apply the ordinary least square method to estimate the equation 4.1.4. The result is as follows

\[
\ln GDP_t = 0.376 + 0.004 \ln FDI_t + 0.01 \ln OPEN_t + 0.967 \ln GDP_{t-1} \\
\text{(4.3.1)}
\]

\[
(0.093) \quad (0.001) \quad (0.005) \quad (0.01) \quad \text{(s.e.)}
\]

\[
(4.039) \quad (2.935) \quad (2.017) \quad (97.536) \quad \text{(t)}
\]

\[R^2 = 0.999\]
\[d = 1.661\]

The estimated coefficients are highly significant as indicated by the high \(t\) values. The short run elasticity of GDP with respect to FDI is about 0.004, suggests that if the FDI goes up by 1 percent, on average, the GDP goes up by 0.004 percent. We also see that when the index of country OPEN increases by 1 percent, on average, GDP increases by about 0.01 percent.

How reliable are the results given in equation (4.3.1)? Since these are time-series data, it is important to take the issue of autocorrelation into consideration. The most celebrated test for detecting autocorrelation is the Dubin-Watson \(d\) statistic test. However, my econometric model is a dynamic model with a first order lagged value of dependent variable as explanatory variable. The Dubin-Watson \(d\) statistic test is not appropriate to find out serial correlation in the data. The Dubin \(h\) statistic test is used instead to test for first order auto correlation. Setting up the hypothesis

\[H_0 : \rho = 0\]
\[H_1 : \rho \neq 0\]

Since the computed \(h\) is 0.9114<1.96, from the properties of normal distribution we know that probability of \(h\)<1.96 is about 95 percent, so we cannot reject the null hypothesis \(H_0\) that \(\rho=0\), that means there is no evidence of first order autocorrelation in the estimated econometric model 4.3.1. (See appendix A3 for details of the test).

I also carried out Breusch-Godfrey test or Lagrange multiplier test for autocorrelation because as suggested by Gujarati (2003, p.681) this test is statistically efficient for finite
samples. The test is reported in the appendix A4 for reader’s reference. The result of the test is as followed: the mean \((n-p)R^2\) follows the chi-square distribution with 28 degrees of freedom, therefore, there is no autocorrelation of first order in the econometric model 4.3.1.

For regression model 4.3.1, Durbin h test and Lagrange multiplier test have come to same conclusion with no autocorrelation. Then, the regression results can be used for interpreting the impacts of FDI and OPEN on GDP. It can be seen from equation 4.3.1 that the coefficient of lagged GDP \((1-\delta)\) is 0.967 or \(\delta\) equals to 0.033. The coefficient of adjustment is 0.033 which means that speed of adjustment is 0.033 or 3.3 percent of the difference between long run GDP and short run GDP eliminated in every year. The long run effects of FDI and OPEN respectively are 0.12 and 0.3.

It can be seen that the speed of adjustment of 3.3 percent is slow over time. For that reason, there are great differences between the short run and long run effects of FDI and OPEN to GDP, the long run effect is much larger than that of short run. In long run if the FDI increases by 1 percent, GDP will increase, on average, 0.12 percent. OPEN has even higher impact than that of FDI in long run, if OPEN increases by 1 percent the GDP will increase by 0.3 percent.
5. Conclusion

The main goal of this thesis is to examine the relationship between FDI and GDP in Vietnam based on econometric regression in general and Partial Adjustment Model in particular. In the econometric model, openness is also added as an additional explanatory variable. The empirical result provides evidences of positive effects of FDI and openness on GDP. Long run effect is higher than the short run effect. This result can be expected from theory as the impacts of FDI and openness to GDP are not in one or two years time, but they can be lasting for twenty or thirty years. The empirical finding also shows the significance of the estimated results with high values of t statistic and R square, but it is necessary to stress that this conclusion is based on a small sample size with 29 observations and there is omitting variable bias, one should be cautious not to take this result literally.

My finding is also supported by other authors who investigated the impacts of FDI on Vietnamese economy. Pham (2002) concludes that the inflow of FDI in 1988-1998 has significant impacts on the Vietnam domestic economy. While Le (2002) asserts that FDI plays an important role in the Vietnam economy.

Based on the findings in this paper, some conclusions can be drawn related to policy implications. First, the results suggest that the government decision to offer plenty of incentives to attract FDI is correct; FDI has contributed to Vietnam GDP, especially in long run. Second, open market door to the world is another right decision; the openness effect on GDP is proved to be larger than that of FDI both in short and long run. Therefore, Vietnam should continue to attract more FDI and be more open to the world.

However, one may have seen that the short run effect of FDI on GDP for Vietnam is 0.004; this number is small and not significantly different from zero. It implies that FDI in short run has a limited contribution to GDP. The long run FDI has a higher impact on GDP than that of short run, it is about 0.12, but this is still small as a long run impact. It can be concluded that FDI in Vietnam has limited impact on GDP. The country could be doing much better, as Vietnam has many advantages in comparing with other developing countries.
One of the reasons for the limited impact can come from the short history of FDI in Vietnam, it is only thirty years after the country reunified in 1975, and if calculated from the time the country opens its doors for FDI in 1987, the time will be lesser. As a matter of fact, the possibility of small sample bias therefore can be expected in the model. Another reason can be explained by the high rate of corruption. Some of the western analysts mention that corruption is at nearly every level of government.

The inefficiencies of state owned enterprises add to worsen the FDI climate. As stipulated by Vietnam law, state own enterprises play the key role in the economy, all key sectors of the economy such as water supply, power generation and distribution, air transportation, banking, telephone, etc are dominated by sole stated own enterprises. However, few of them are working efficiently. Other reasons for the limited impact are policy inconsistency, poor infrastructure, high cost of doing business, and insufficient promotions for FDI.

Vietnam authorities have to get serious about corruption and carry out strongest measures to cross away it. Vietnam should operate an equal playground and pass the legislation that levels the playing field among state owned firms, private sectors and foreign investors. The closed state owned sectors should be more open to private and foreign investors by pushing privatization more aggressively.

Usually, there are many guidelines for a single provision of law on FDI. The new guideline can be quite different, or even conflicting with the previous guidelines. In order to have a consistent policy, the law on FDI should be amended to remove unsuitable guidelines. Government also needs more coherent in its decisions on foreign invested projects.

Infrastructures such as telecommunication, internet, road, power generation and distribution, etc have to be upgraded by opening these sectors for all types of investors. The cost of doing business in Vietnam will be decreased with a good infrastructure of the country.

Foreign investors still have little information about Vietnam. Vietnam has to advertise herself to the world through direct and indirect methods. Indirect methods are through
internets, newspapers, country event’s celebrations. Direct ways are to involve more to international actions by attending fairs abroad, through the promotion of Vietnamese embassies abroad. Visits of top leaders of the country to other countries are also good chances for advertising the attractiveness of the country.

A continued process of reform can help to realize the full potential of FDI and allow FDI to complement local effort in accelerating the country’s development.
References

Book:

Internet:


**Journal:**


## Appendix

**A1) Table 5:** Actual value of FDI in Vietnam, 1988-2004 (in millions of dollars)

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Projects</th>
<th>Total Registered Capital ($million)</th>
<th>Legal Capital ($million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>37</td>
<td>321.80</td>
<td>288.40</td>
</tr>
<tr>
<td>1989</td>
<td>69</td>
<td>525.20</td>
<td>311.50</td>
</tr>
<tr>
<td>1990</td>
<td>108</td>
<td>735.00</td>
<td>407.50</td>
</tr>
<tr>
<td>1991</td>
<td>151</td>
<td>1,275.00</td>
<td>663.60</td>
</tr>
<tr>
<td>1992</td>
<td>197</td>
<td>2,027.00</td>
<td>1,418.00</td>
</tr>
<tr>
<td>1993</td>
<td>274</td>
<td>2,589.00</td>
<td>1,468.50</td>
</tr>
<tr>
<td>1994</td>
<td>367</td>
<td>3,746.00</td>
<td>1,899.00</td>
</tr>
<tr>
<td>1995</td>
<td>408</td>
<td>6,848.00</td>
<td>3,157.00</td>
</tr>
<tr>
<td>1996</td>
<td>387</td>
<td>8,979.00</td>
<td>3,280.00</td>
</tr>
<tr>
<td>1997</td>
<td>358</td>
<td>4,894.20</td>
<td>2,404.40</td>
</tr>
<tr>
<td>1998</td>
<td>285</td>
<td>4,138.00</td>
<td>1,976.00</td>
</tr>
<tr>
<td>1999</td>
<td>311</td>
<td>1,568.00</td>
<td>693.30</td>
</tr>
<tr>
<td>2000</td>
<td>389</td>
<td>2,018.00</td>
<td>1,625.00</td>
</tr>
<tr>
<td>2001</td>
<td>550</td>
<td>2,592.00</td>
<td>1,044.10</td>
</tr>
<tr>
<td>2002</td>
<td>802</td>
<td>1,621.00</td>
<td>721.40</td>
</tr>
<tr>
<td>2003</td>
<td>748</td>
<td>1,899.60</td>
<td>933.30</td>
</tr>
<tr>
<td>2004</td>
<td>679</td>
<td>2,804.40</td>
<td>985.65</td>
</tr>
<tr>
<td>Total</td>
<td>6,120</td>
<td>47,861.20</td>
<td>23,276.65</td>
</tr>
</tbody>
</table>

A2) Determinants of FDI

**MARKET**
- Size; income levels; urbanization; growth prospects and stability; access to regional market; distribution and taste patterns

**RESOURCES**
- Natural resources; location

**COMPETITIVENESS**
- Labour availability, cost, skills, trainability; managerial/technical skill; access to inputs, physical infrastructure; supplier base; technology support; financial markets.

**MACRO POLICY**
- Management of crucial macro variables; ease of remittances; access to foreign resources

**PRIVATE**
- Promotion of private ownership; clear and stable policies; easy entry/exit policies; efficient financial market; other support

**TRADE & INDUSTRY**
- Trade strategy; regional integration and access to markets; ownership controls; competition policies; support for SMEs; technology import

**FDI POLICIES**
- Ease of entry, ownership, incentives, access to inputs; transparent and stable policies

**RISK PERCEPTION**
- Perception of country risk, based on political factors, macro management, labour markets, policy stability

**LOCATION, SOURCING, INTEGRATION**
- Company strategies on location, sourcing of products/inputs, integration of affiliates, strategies, alliances, training, and technology transfer.

*Figure 4: Determinants of FDI*
A3) Dubin h statistic test

The general form of equation 4.3.1 is equation 4.1.4, Rewrite equation 4.3.1 and 4.1.4 we have:

\[ \text{lnGDP}_t = 0.376 + 0.004\text{lnFDI}_t + 0.01\text{lnOPEN}_t + 0.967\text{lnGDP}_{t-1} \]  
(A.3.1)

(0.093)   (0.001)          (0.005)         (0.01)  
(4.039)   (2.935)          (2.017)            (97.536) 

\( R^2 = 0.999 \)

\( d = 1.661 \)

\[ \text{lnGDP}_t = \delta \beta_0 + \delta \beta_1\text{lnFDI}_t + \delta \beta_2\text{lnOPEN}_t + (1- \delta ) \text{lnGDP}_{t-1} + \delta e_t \]  
(A.3.2)

The Dubin h statistic test is defined as:

\[ h = \rho \sqrt{\frac{n}{1 - n[\text{var}(1-\delta)]}} \]  
(A.3.3)

\( n \)- Sample size  
\( \text{var}(1-\delta) \)- variance of the coefficient of the \( \text{lnGDP}_{t-1} \)  
\( \rho \)- estimate of first order serial correlation  
\( \rho \sim (1-d/2) \)

From equation A.3.1, we can compute, \( \rho \sim (1-d/2) = 0.1695 \) (Dubin \( d = 1.661 \)). \( \text{Var}(1-\delta) = \text{var}(\text{lnGDP}_{t-1}) = (0.01)^2 = 0.0001 \) and \( n = 29 \). Filling equation (A.3.3) with all the counted values, we have:

\[ h = 0.1695 \sqrt{\frac{29}{1 - 29(0.0001)}} = 0.9114 \]

Since \( h \) is 0.9114<1.96. We cannot reject the null hypothesis \( H_0 \) that \( \rho = 0 \). There is no evidence of first order autocorrelation.
A4) Testing autocorrelation with Lagrange multiplier test

Assuming that the error term \( e_t \) in equation A.3.2 follows the \( p \)th order autoregressive, \( e_t \) can be expressed as

\[
e_t = \rho_1 e_{t-1} + \rho_2 e_{t-2} + \ldots + \rho_p e_{t-p} + u_t
\]  

(A.4.1)

\( u_t \) is white noise error

Since we want to consider for first order autocorrelation, therefore \( p \)th order is 1, then the equation (A.4.1) can be written as

\[
e_t = \rho_1 e_{t-1} + u_t
\]  

(A.4.2)

Setting up test:

\( H_0: \rho_1 = 0 \)

\( H_1: \rho_1 \) is difference from zero

The Lagrange multiplier test is defined as

\[(n-p)R^2 \sim \chi^2_p\]  

(A.4.3)

\( n \)- sample size

\( p \)- degree of lag

\( \chi \)- chi-statistic

\( R^2 \)- R square is obtained when we regress \( e_t \) on the original explain variables \( \ln FDI \), \( \ln OPEN \), and lag of \( \ln GDP \) from equation A.3.2, the regression model as follow

\[
e_t = \alpha_1 + \alpha_2 \ln FDI_t + \alpha_3 \ln OPEN_t + \alpha_4 \ln GDP_{t-1} + \rho_1 e_{t-1} + u_t
\]  

(A.4.4)

The result of \( R \) square from regression the model (A.4.4) is not significantly different from zero. When putting \( R \) square into equation (A.4.3) with \((n-p) = 28\) (as \( n \) is 29, \( p \) is 1), the result of \((n-p)R^2\) is nearly zero. The probability of obtaining a chi-square value of 28 degrees of freedom which is significantly equal to zero is very high, it is as much as 95 percent. That means \((n-p)R^2\) follows the chi-square distribution with 28 degrees of freedom. As a matter of fact, we can not reject the null hypothesis that \( \rho_1 = 0 \). There is no autocorrelation of first order.