THE CAUSAL RELATIONSHIPS AMONG ECONOMIC GROWTH, FOREIGN DIRECT INVESTMENT AND FINANCIAL SECTOR DEVELOPMENT IN EAST ASIAN COUNTRIES: AN ARDL APPROACH

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ABSTRACT

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The main purpose of the study is to examine the cointegration relationships among economic growth, foreign direct investment and financial sector development in 4 East Asian countries, namely Korea, Malaysia, the Philippines and Thailand between the years 1971-2008 by autoregressive distributed lag (ARDL) approach.

In the existing literature, there is no study examining the causal relationships among economic growth, foreign direct investment and financial sector development by applying ARDL methodology for these East Asian countries. The contribution of this study to the literature, the cointegration relationships are constructed to observe the direct linkage among these variables by ARDL approach. If cointegration relationships exist among these variables, then the effect of each regressor on the dependent variable is also investigated. The results of the study indicate that foreign direct investment and financial sector development could be long run forcing variables of economic growth. Additionally, economic growth and financial sector development could be long run forcing variables of foreign direct investment. However, there is not sufficient evidence that economic growth and foreign direct investment together are long run key determinants of financial sector development in a country as obtained in this study.

Keywords: Economic growth, foreign direct investment, financial sector development, cointegration, autoregressive distributed lag (ARDL)

ÖZ

DOĞU ASYA ÜLKELERİNDEKİ EKONOMİK BÜYÜME, DOĞRUDAN YABANCI YATIRIM VE FİNANSAL SEKTÖR GELİŞİMİ ARASINDAKİ NEDENSELLİK İLİŞKİSİ: ARDL YAKLAŞIMI

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Bu çalışmanın amacı, 4 Doğu Asya ülkesi olan Kore, Malezya, Filipin ve Tayland'daki ekonomik büyüme, doğrudan yabancı yatırım ve finansal sektör gelişimi arasındaki eşbütünleşme ilişkisini 1971 ve 2008 yılları arasında ARDL yöntemiyle incelemektir.

Bu çalışmanın var olan literatüre katkısı ise, daha önce hiçbir çalışmada ekonomik büyüme, doğrudan yabancı yatırım ve finansal sektör gelişimi aynı anda eşbütünleşme analizi altında direkt bağlantılar kurularak ARDL metoduyla incelenmemiştir. Yapılan bu çalışma sonucunda, doğrudan yabancı yatırımın ve finansal gelişmenin, ekonomik büyümenin uzun dönem belirleyicileri olabileceği saptanmıştır. Bunun yanı sıra, ekonomik büyümenin ve finansal sektör gelişiminin, ülkeye gelen doğrudan yabancı yatırımların uzun dönemli zorlayıcı değişkenleri olduğu gözlemlenmiştir. Ancak çalışmanın sonuçlarına dayanarak ekonomik büyümenin ve doğrudan yabancı yatırımın, finansal sektör gelişiminin uzun dönemli belirleyicisi olduğuna ilişkin yeterli bulguya rastlanmamıştır.

Anahtar kelimeler: Ekonomik büyüme, doğrudan yabancı yatırım, finansal sektör gelişimi, eşbütünleşme, ARDL

To my family

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ARDL	autoregressive distributed lag
CEE	Central and Eastern Europe
CUSUM	cumulative sum of recursive residuals
CUSUMSQ	cumulative sum of squares of recursive residuals
ECM	error correction model
FDI	foreign direct investment
GDP	gross domestic product
IMF	International Monetary Fund
ISO	International Standards Organization
MNCs	multinational corporations
OECD	Organization for Economic Cooperation and Development
SBC	Schwarz Bayesian Criteria
SNA	System of National Accounts
UNCTAD	United Nations Conference on Trade and Development

CHAPTER 1

INTRODUCTION

There are extensive number of studies exploring the relationships among economic growth, foreign direct investment (FDI) and financial sector development in the literature.

FDI, the capital flows into the host country, brings financial resources and also affects the host country's economic performance in different ways. Therefore, it is possible to see the impacts of FDI on the host country's economy through different channels such as savings, investments, the balance of payments, technology and industry structure (Duttaray et al., 2008). It is claimed that FDI has a positive impact on the host country's economy through bringing capital, increasing export, domestic saving and investment (Duttaray et al., 2008; Borezstein et al., 1998). Nonetheless, there are views that contrast with these positive contributions of FDI. In some cases FDI could decrease the domestic investment in the host country by crowding out domestic saving and investment (Harrison & McMillan, 2003), and it may not be able to increase export since some foreign firms import the raw or intermediate materials from the home country (De Mello & Fukasaku, 2000). As for technology, host country may have benefited from the positive spillovers of FDI such as new technology, production techniques and managerial skills. As a result of these positive spillovers, the productivity of the host country increases (Dimelis, 2005). Besides, FDI also promotes the research and development in the host country (Lall, 2000). In spite of many positive spillover effects of FDI, it may also create negative spillover effects. For instance, foreign firms could pay higher wages to the labor, and this leads to a rise in the wages, which also increase the input cost for the domestic firms (Feestra & Hanson, 1997). Moreover, according to Wang and Yu (2007), too much foreign presence may decrease the domestic firms' productivity in general. For instance, Aitken and Harrison (1999) claims that foreign firms steal demand from the domestic firms; thus, domestic firms cannot benefit from the economies of scale due to low demand. In terms of industry structure, FDI improves

the vertical and horizontal levels of industry structure. At horizontal level, FDI makes the competition fierce and also makes domestic firms to produce more efficiently (Fortanier, 2007) At vertical level, foreign firms help their suppliers to produce more quality products on time by making them acquire ISO certificates (Jarcovik, 2004). However, there may be some cases where foreign firms supply the raw materials or intermediate goods from the home countries (De Mello & Fukasaku, 2000). On the other hand, it is also possible to see the effect of economic growth on the FDI attraction into the host country. The eclectic paradigm of Dunning (1977), also expressed as *OLI*, categorizes the advantages of the host countries and claims that these advantages are the determining factors of FDI attraction into the countries. Among these factors, economic growth could be a considerable determinant during host country selection since a growing economy with increasing market size may imply a market promising profitable opportunities for foreign investors. This is called *growth led FDI* hypothesis (Zhang, 2001).

When it comes to the relationship between financial sector development and economic growth, there are two main approaches belonging to Patrick (1966). The first approach is the *supply leadi*ng hypothesis, and it claims that financial sector development promotes economic growth. This claim has been investigated vastly and supported in the literature (McKinnon, 1973; Goldsmith, 1969; Fry, 1978; Gupta, 1987; Shaw, 1973). Levine (1997) classifies the main tasks of financial sector which contributes to the economy. Firstly, financial markets help managing the liquidity and idiosyncratic risk. By the use of various financial instruments, handling risk is easier for investors. Secondly, it helps mobilization of savings and allocation of resources in an efficient way to increase productivity. Financial markets transform the resources from least productive firms or entrepreneurs to most productive ones. Thirdly, the presences of financial institutions increase the monitoring the managers and exerting corporate control. Finally, it facilitates the exchange of goods and services. On the other hand, the second approach of Patrick (1966) is the *demand following* hypothesis. According to Patrick's view, financial sector development can be promoted with economic growth. The claim behind this approach is that as the economy grows, the need for various financial services has

increased in the society. Therefore, new financial instruments and institutions have been created and built to meet the demand of savers and investors.

In terms of the relationship between FDI and financial sector development, there are few studies considering this relationship in the existing literature. Financial sector development can be an important determinant of FDI attraction into the host country. This determinant could affect the FDI through two channels. The first channel is through the stock market, and it is crucial for foreign investors to give decision about the FDI investments. Foreign investors are able to test the business environment by acquiring shares of direct investment enterprise through the stock market before bringing FDI (Hailu, 2010). The second channel of financial sector development affecting FDI inflows is credit market. According to Hermes and Lensink (2003), developed and efficient credit markets are so vital for foreigners since they may need more capital from domestic markets to expand their business and innovative activities. Additionally, according to Deichmann et al. (2003), a well developed banking system of host country is needed to ease financial transactions of foreign companies such as payments to their employees, customers and suppliers in the local currency. When it comes to the FDI affect on financial sector development of the host country, it is possible to see that foreign direct investment may also influence the financial sector development of the host country through stock market and credit market. Zakaria (2007) claims that active foreign presence in the stock market makes it more liquid since foreign firms may finance their investments by selling existing shares or issuing new shares. Alternatively, they may make investments by purchasing the shares from the stock market in the host country. In terms of credit market, if domestic firms encounter with credit constraints in a country such as against state-owned enterprises, they seek for foreign partners to reduce the inefficiency of financial markets (Huang, as cited in Héricourt & Poncet, 2009). According to this view, since foreign firms have more financial power and superior legal status, they may reduce the financial distortions and market imperfections in the domestic markets. In short, FDI may increase the efficiency of domestic credit markets in terms of resource allocation. Additionally, the foreign bank presence may offer benefits such as increasing the quality,

variability and availability of financial products in the domestic financial markets. Thus, domestic banks can benefit from these innovations and increase their efficiency to compete with foreign competitors. The foreign banks are also very sensitive in risk management and bank supervisory. Thus, they demand regulatory and legal framework from the government agencies (Levine, 1996; Agénor, 2003; Coppel & Davies, 2003). However, in some cases it is possible to see the negative impact of foreign presence in the domestic financial markets. Since foreign banks have lower operational costs, domestic banks may be in the need of merge with foreign competitors. This, however, increases the concentration in the financial markets and harms the overall banking efficiency and the availability of the credit. In addition, in recession time if foreign banks are not able to make profit, they abruptly leave the host country. This may worsen the balance in the financial markets, which is unpleasant (Agénor, 2003).

As it is seen from the existing literature, the relationships among three variables have been studied in the following combinations: a) economic growth and FDI, b) economic growth and financial sector development, c) FDI and financial sector development (see Chapter 2 for more details). In addition to these, the mutual effect of FDI and financial development on economic growth has been investigated as well (see Alfaro et al., 2004; Hermes & Lensink, 2003; Durham, 2004). However, there is no study which mainly investigates cointegration among economic growth, FDI and financial development simultaneously and sets up direct linkages among them by applying autoregressive distributed lag (ARDL) approach. In this study, it is desired to examine the causal relationships among economic growth, FDI and financial sector development under 3 separate models for 4 East Asian countries, namely Korea, Malaysia, the Philippines and Thailand between the years of 1971 and 2008. These East Asian countries have been selected because they have adopted liberal investment policies to attract FDI. Then, these countries have taken place as investment icons in the global financial markets and have attained their goals by attracting huge amount of FDI. Consequently, their economies have grown steadily in the last 20 years because of these capital flows (Dondeti et al., 2008; Wongbangpo & Sharma, 2002). In the application of cointegration methodology,

ARDL approach (Pesaran & Pesaran, 1997) has been preferred to detect the long run forcing variables of each variable for several reasons. One of the reasons is that the cointegration methodologies such as Granger Representation Theorem (1987) or Johansen and Juselis (1990) require the variables to be in the same integration order. However, ARDL method can be applicable when the variables are not in the same integration order. In this study, the variables of the countries have different integration orders. Hence, ARDL is a better way to test the cointegration. Moreover, ARDL method is regarded as efficient for small sample size studies. Additionally, it is more contemporary econometric method for cointegration analysis when compared to other econometric methods. This is also additional contribution to the literature when testing the cointegration relationships among these variables. Three cointegration models have been constructed and analyzed by ARDL method for each country. The first model checks whether FDI and financial sector development are long run key determinants of economic growth or not. The second model tests whether economic growth and financial sector development are long run key determinants of FDI or not. Finally, the third model checks whether economic growth and FDI are long run forcing variables of financial sector development or not.

This study is organized as follows: In Chapter 2, overview about economic growth, FDI and financial sector development is given, and in Chapter 3, the empirical studies about the relationships among these variables in the existing literature are reported. The data and methodology used in this study are explained in Chapter 4. The empirical test results of the study are discussed in Chapter 5 in details, and the conclusion is summarized in Chapter 6.

CHAPTER 2

OVERVIEW OF ECONOMIC GROWTH, FOREIGN DIRECT INVESTMENT AND FINANCIAL SECTOR DEVELOPMENT

2.1 Definition of Economic Growth

Economic growth is defined as "the steady increase in aggregate output (gross domestic product) over time" (Blanchard, 2006, p. 205). According to Blanchard, when examining a country's economic performance, its output per capita could be more preferable instead of its gross domestic product (GDP). He has pointed a few reasons behind this preference. One of the reasons is that a country's evolution of standard living is determined by the evolution of its output per capita rather than the evolution of its GDP. Another reason is that each country has a different population size. For instance, even if two countries with different population sizes have the same GDP, their output per capita and the standard of living may be different because of different population sizes. In other words, output per capita considers the population sizes, and this could hinder the misleading information about the actual economic performances of countries.

On the other hand, when examining the economic performances of countries, the output per capita of each country is converted into the same currency in order to be compared better. However, the exchange rates vary over the time; thus, up or down movements in the exchange rates are reflected on the prices of the goods and services. Nevertheless, these up or down movements in currencies do not mean an actual increase or decrease in the standard of living. Therefore, considering output per capita in any currency may lead to misleading information. In addition to that, each country has different price mechanism for basic goods and services. For instance a country may have smaller output per capita than another country has. However, this does not mean that the citizens of the country with lower output per capita consume less than the citizens of the country with higher output per capita. In general, it is observed that if a country's output per capita is lower, the prices of basic goods and services in that country are also lower (Blanchard, 2006).

2.2 Descriptive Statistics of Economic Growth

As mentioned earlier, the annual growth rate in the output per capita is a more reliable and preferable indicator than the annual output per capita in any specific currency. Here are the descriptive statistics of annual growth rate of output per capita in Korea, Malaysia, Thailand between the years 1971-2008 and the descriptive statistics of annual growth rate of output per capita in the Philippines between the years 1971 - 2007 in Table 2.1:

Table 2.1 Annual growth rate of output per capita in percentage (%)

Country	Min.	Max.	Mean	Median	Std Dev.	Skewness	Kurtosis
Korea	-7.56	10.06	5.59	5.74	3.46	-1.69	7.20
Malaysia	-9.64	9.02	4.11	4.73	3.64	-1.82	7.05
The Philippines	-9.77	5.93	1.41	2.40	3.41	-1.88	7.00
Thailand	-11.06	11.63	4.46	3.98	3.85	-1.51	8.36

Source: World Development Indicators (2010)

As seen from the Table 2.1, the countries used in this study have means of annual growth rate in output per capita lying between 4% and 5.6% except the Philippines. The Philippines has the lowest mean of annual growth rate in output per capita with 1.41%. In addition to that, the maximum annual growth rate of Korea, Malaysia and Thailand is 10.06%, 9.02% and 11.63% respectively whereas the Philippines' maximum annual growth rate is approximately 6%.

2.3 Definition of Foreign Direct Investment

In order to grow, countries need to save and invest. This is especially more valid for developing countries. However, the amount of capital that countries require for growth is more than the funds they have. As a result countries with less saving rate could not form required capital accumulation through investment by themselves (Arango, 2008). Hence they perceive FDI inflows as a major source of capital for income growth, economic development and modernization. They have followed policies to attract FDI into their countries and have tried to benefit from the foreign

capital inflows at maximum level (Organization for Economic Cooperation and Development [OECD], 2002).

As the barriers on cross border business operations have removed, investors have increased the amount of capital flow at international level and they have started to apply overseas investment. In order to attain the optimal return and efficient management from their investment, they have made investments in different and complex structures. However, this situation has made recording statistics and categorizing or defining the investment types more complex for countries (OECD, 2008). Thereby, OECD (2008) has made a benchmark definition for FDI and this definition is fully consistent with the concepts and definitions of International Monetary Fund (IMF)'s Balance of Payments Manual and System of National Accounts (SNA). With the help of the international standard FDI definition, it is possible to conduct more reliable researches for analysis. According to the definition of OECD (2008), FDI means that a resident entity in one economy (direct investor) makes a cross border investment with the aim of forming a *lasting* interest in an enterprise (direct investment enterprise) in another country's economy. The direct investor could be:

- an individual
- a group of related individuals
- an incorporated or unincorporated enterprise
- a public or private enterprise
- a group of related enterprises
- a government body
- an estate, trust or other societal organization
- or any combinations of above.

The *lasting* term points out that long term relationship between the direct investor and the enterprise. Moreover, it also indicates that the direct investor owns at least 10% of voting power in the management of the direct investment enterprise either directly or indirectly. Direct investment enterprise is an enterprise in which the

foreign direct investor has at least 10% ownership or voting power of an incorporated enterprise or the equivalent ownership of an unincorporated enterprise. At least 10% ownership or voting power gives authority to the direct investor in the management of direct investment enterprise (OECD, 2008).

The country which receives FDI is called host country whereas the home country is the country in which the foreign investor has already been operating his business operations. Many investors, however, could operate in more than one country and this makes the definition a bit unclear. In such a case, the principal operating place of the investor should be determined to meet the definition above. (Konrad von Moltke, 2004)

When it is desired to look at how the FDI flows are included in a country's records, knowing the items of balance of payments is required. According to the International Monetary Fund (IMF)'s Balance of Payments Manual (1993), the country's balance of payments consists of two main accounts, namely current account, and capital & financial account. Current account is where the goods, services, income and current transfers are recorded. Capital & financial account consists of two subcategories. Capital transfers (transfers of ownership of fixed assets) and the acquisition or disposal of non-produced, nonfinancial assets (intangible assets such as patented entities, goodwill) are recorded under capital account whereas direct investment, portfolio, other investments and liabilities are recorded under financial account. The flows of FDI are recorded in the direct investment under the financial account item in the balance of payments.

2.4 Types of Foreign Direct Investment

There are different types of FDI inflows into the host country. OECD (2008) has categorized the types of FDI into four main sections and the sections are as follows:

Mergers and Acquisitions (M&A): M&A transactions are the purchase or sale of existing equity by nonresidents. If the type of FDI is M&A, it is generally observed

that M&A will not bring radical changes into the host country's economy in terms of production and employment. However, if the acquired enterprise requires restructuring, then significant changes can be applied to the enterprise by the investors.

Greenfield Investment: In this type of investment, the foreign investor founds a subsidiary company in the host country and this creates new businesses. With the creation of such an investment type, new and different perspectives in terms of production, employment are brought to the economy of the host country.

Extension of Capital: The foreign investor buys the newly issued shares which belong to the already established subsidiary company in order to expand its business activities. Like greenfield investments, extension of capital may lead to innovations in terms of production and employment in the economy of host country.

Investment for Financial Restructuring: The existing shares which are issued by an already existing subsidiary company are purchased by the foreign investors for debt repayment or loss reduction.

2.5 Movements of FDI Flows

International financial system has been shaped in a new form with globalization concept since the 1970s. Globalization is defined as "the broadening and deepening linkages of national economies into a worldwide market for goods, services and especially capital" (Cho, 2003, p.99). There are many forces that drive globalization and also shape the FDI flows around the world.

Firstly, according to Mundell (1999), one major factor of globalization is the collapse of Bretton Woods System and the adoption of the flexible exchange rate regime (as cited in Schmukler, 2004). After World War II, in 1945, Bretton Woods System was created in order to regulate the postwar international monetary system. In this system, each country's money was in relation to the U.S. dollar and the

dollar was pegged to the gold. In order to make payments at international level, countries use the U.S. dollar as well as gold. However, in 1973, the Bretton Woods System fell apart, and the major currencies such as dollar, mark, pound and yen were allowed to fluctuate against each other and gold was not used as an official international reserve asset anymore (Eun & Resnick, 2007). Thanks to the adoption of the flexible exchange rate regime system, capital mobility between the countries has increased in a significant amount.

Secondly, privatization of major State enterprises and the policy implementations in industrialized and developing countries have made financial investors invest in portfolio diversification to raise their profits. This also has affected FDI flows in a positive way among the countries (United Nations Economic Commission For Latin America and Caribbean, 1999).

Thirdly, there were deregulations in the national financial markets in the developing countries, which has increased the capital flows among the countries particularly into the stock markets yielding high returns (United Nations Economic Commission For Latin America and Caribbean, 1999).

Finally, the advances in the telecommunications and computer technology have lead to the innovations in financial sector (i.e. the increase in the number and variety of financial instruments) and the formation of new financial markets. The introduction of a large variety of new products (i.e. currency and interest rate options and swaps) has reduced the traditional credit instruments and credit evaluations, and they have formed their own markets. The aims of using these instruments are reducing the cost of financial transactions and giving opportunities to handle financial risks. Thereby, the investors have become more confident at international financial markets thanks to them (Levich, 1987).

These global changes have been reflected on the amount of FDI flows around the world. When the FDI flows are examined visually with numbers from Figure 2.1, the movement of FDI inflows into the countries is clearly observed between 1980

and 2008. At the global level, there is an increasing trend in the total amount of FDI inflows among the countries. In addition, it is also seen from Figure 2.1, developed countries' economies have obtained the biggest share of the FDI inflows among the three major economic groups of economies (i.e. developed, developing and transition economies). Developing countries are following the developed ones in the second rank and transitions economies have the least share of foreign capital.

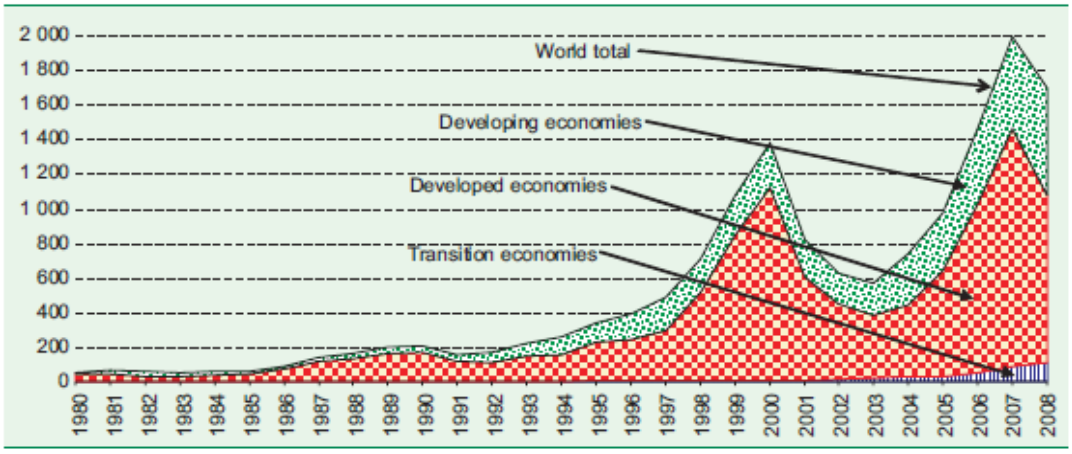

Figure 2.1 FDI inflows, global and by groups of economies, 1980-2008 (Billions of Dollars)
Source: UNCTAD World Development Report, 2009

2.6 Descriptive Statistics of Foreign Direct Investment

The descriptive statistics of FDI inflows into Korea, Malaysia, the Philippines and Thailand are given in Table 2.2. The time line for Korea, Malaysia and Thailand is 1971-2008 whereas for the Philippines is between the years 1971 and 2007. The FDI variable is the FDI inflows as a percentage of GDP.

Table 2.2 Annual FDI inflow (GDP %)

Country	Min.	Max.	Mean	Median	Std Dev.	Skewness	Kurtosis
Korea	0.01	4.62	0.59	0.34	0.83	3.34	15.74
Malaysia	0.60	8.36	3.99	3.65	1.93	0.65	2.79
The Philippines	0.03	2.95	1.22	1.06	0.83	0.46	2.06
Thailand	0.20	6.70	1.99	1.32	1.66	0.96	2.99

Source: UNCTAD (2010)

Malaysia has the biggest mean of FDI inflow (GDP %) with a mean of 3.99 %. The rest of the countries have means of FDI inflow (GDP %) which lie between approximately 0.6 % and 2%. Among these countries, Malaysia is the most promising country in terms of FDI attraction.

2.7 Definition of Financial Sector Development

Financial development has gained so much attention due to its significant role in the economies of countries. Financial development could be in two ways; financial widening and financial deepening. Financial widening means that the variety of financial services and the expansion of financial institutions and markets. Financial deepening, on the other hand, is an increase in the amount of using financial services and institutions per capita. Besides that, financial deepening is also defined as a rise in the ratio of financial assets to income. Consequently, financial development through either widening or deepening has moved the saving and investment opportunities into better and more effective level, and these conditions make more productive resource allocations in the economy (Ahmed & Ansari, 1998).

2.8 Functions of Financial Systems

So as to look at the functions of financial systems in detail, Levine's classification may be more helpful. According to Levine (1997), there are 5 main functions that financial systems do. They are namely facilitating the trading, hedging, diversifying and pooling of risk, allocating resources, monitoring managers and exerting corporate control, mobilizing savings, and facilitating the exchange of goods and services. They are explained in more details as follows:

a) Facilitating the Trading, Hedging, Diversifying and Pooling of Risk

Financial systems are trying to manage two types of risk. The first one is liquidity risk. Liquidity is converting the assets into the purchasing power at agreed price easily and speedily. The uncertainties related to converting the assets into a medium

of exchange result in liquidity risk. Moreover, transaction costs and informational asymmetries hinder liquidity and increase the exposure of liquidity risk. Thus, so as to eliminate this type of risk, financial markets and institutions have emerged. If liquid capital markets are created and they function well, the trade of financial instruments will become less costly and the uncertainty about timing and settlement of the trades will become less (Levine, 1997).

The second type of risk is idiosyncratic risk, which means the risk results from the individual projects, firms, industries, regions and countries. The financial markets offer various types of instruments for trading, pooling and diversifying the risk. High return projects are riskier than low return projects. Besides that savers are not in favor of risky projects. In such a case, financial intermediaries direct the savers to form portfolios towards projects which provide high expected return. In this way, financial markets help not only finding resources for risky projects, but also arrange the expected return to please the savers about risky projects. (Levine, 1997)

In addition to the handling these types of risks, financial services also try to diversify the risk resulting from the innovative projects. Some entrepreneurs want to make technological changes to increase their profitability. However, the projects which are innovative oriented are riskier when compared to other types projects. In such cases, the entrepreneurs are encouraged by the portfolio diversification of innovative projects by the financial intermediaries. As a result, entrepreneurs could create opportunities to make innovations without being exposed to too much risk. These innovations may contribute to the technology significantly (King & Levine, as cited in Levine, 1997).

b) Acquiring Information about Investments and Allocating Resources

According to Corasso (1970), obtaining information about firms, manager and market circumstances is very expensive and difficult (as cited in Levine, 1997). When regarding individuals, they may not have time and capability to acquire information about entire firms, managers and market conditions. Because of not having reliable and sufficient information, savers would not be eager to invest.

Hence, the capital will not be transferred to use in the projects, and this hinders the creation of a value due to high information cost. On the side of investors, if they use their own skills and sources individually like savers, they also have to pay a cost to obtain information about the investments. In order to minimize the cost of acquiring information for both savers and investors, financial institutions do this job for its all members. Thereby, financial institutions give chances to their members to exploit their resources in more economical ways (Levine, 1997).

Moreover, financial intermediaries have the information about enterprises that would exploit the allocated capital in the most efficient way and grow faster. In the light of this information, they select the most promising ones and they induce the capital to them to promote better economy. (Greenwood & Jovanovic, as cited in Levine, 1997). In addition, financial intermediaries promote technology by supporting the entrepreneurs who could launch new and efficient production processes (King & Levine, as cited in Levine, 1997).

c) Monitoring Managers and Exerting Corporate Control

Financial contracts, intermediaries and markets not only decrease the cost of information acquisition, but also form a control mechanism on the managers and the corporate. Thanks to the financial arrangements, firm owners could force managers to manage the corporate in the ways related to the owners' best interests. On the other hand, outside creditors, such as banks, equity and bond holders make financial contracts with the corporate in order to make managers and inside owners consider the best interests of outsiders (Levine, 1997).

In addition to enforcement on insiders, the controlling cost of the insiders has decreased with the developments in financial services. When outsiders lend capital to the firm to be used for projects, the insiders would pay an interest rate to the outsiders if the project's return is sufficient and high. In such a case, outside lenders do not have to examine the projects return since they receive the return. However, if the project's return is insufficient or low, the insider could not pay the determined interest rate to the outsider. In such a case, the outsiders have to verify the project's

return. As a result, the lenders both do not receive the return from the project, but also they have to pay the cost of monitoring the project. This verification cost impedes the resource allocation for the project. As a solution, financial contracts such as debt contracts are regulated between borrowers and lenders to decrease the monitoring and enforcement costs (Levine, 1997).

Moreover, financial intermediaries collect the savings of many individuals and allocate the capital resources to the project owners. Here the borrower is not monitored by all individual savers; the financial institutions do this on the behalf of savers. Hence, this decreases the monitoring cost (Diamond, as cited in Levine, 1997).

Furthermore, stock markets also contribute to the corporate control. If the shares of a corporate are being traded publicly in the stock market, the stock prices reflect the information about the inside of firm. By benefiting this situation, the outsider owners of the corporate link the managerial compensation and stock prices. This linkage forces managers to increase the firm value and to behave on the best interest of owners (Levine, 1997).

d) Mobilizing Savings

Mobilizing means accumulate the capitals from different savers and allocate them to the investors. Moreover, offering small denomination of instruments is a part of mobilization. Financial markets offer these types of instruments so that individuals invest into the firms in the efficient scale instead of buying or selling the entire firms. As a result, they could manage a diversified portfolio in a flexible way, and they also decrease the liquidity risk with a well diversified portfolio. In addition, it is essential to make savers feel comfortable about the decisions of their savings. So as to handle this issue, numerous financial instruments are prepared by the financial instruments (Levine, 1997).

e) Facilitating Exchange of Goods and Services

In the exchange of goods and services, According to Smith (1776), the barter exchange is very difficult and inconvenient since the determination of the features of goods is difficult and costly. As a result, high information cost played a crucial role in the emergence of money. Therefore, the invention of a reliable and recognizable instrument of exchange has facilitated exchange process. As financial arrangements decrease the cost of transactions, it makes contributions to the specialization and technological innovation (as cited in Levine, 1997). According to Lamoreaux and Sokoloff (1996), as in 1800s, when the economies adopted the money as a medium of exchange, the developments in the institutions made the exchange of technology easier, and this promoted creative individuals to become more specialized and more productive in terms of inventions (as cited in Levine, 1997).

2.9 Measures of Financial Development

In order to evaluate the financial development level of a country, the functions of the financial system in the country should be measured. However, it is not so easy and possible to determine measures related to searching profitable ventures, monitoring and controlling managers and corporate, managing risk and facilitating resource mobilization. In order to determine the provision of these features of the financial systems, three measures are constructed. They are namely liquid liabilities, commercial–central bank and private credit (Levine et al., 2000). They are explained in more details as follows:

a) Liquid Liabilities

"Liquid liabilities (M3/GDP) equals the currency plus demand interest bearing liabilities of banks and nonbank financial intermediaries divided by GDP." (Levine et al., 2000, p.37). This indicator reflects the financial depth and the size of financial sector. However, it has a disadvantage that it cannot measure the amelioration of information asymmetries and transaction costs. In addition, it covers

the deposits by one financial intermediary in another, so it leads to double recording (Levine, et al., 2000).

b) Commercial-Central Bank

"Commercial-central bank equals the ratio of commercial bank assets divided by commercial bank plus central bank assets" (Levine, et al., 2000, p.38). King and Levine (1993) recommended this indicator as a measure of financial intermediary development since it indicates the degree to which commercial banks allocate society's saving when compared to central bank. This measure is more likely to reflect the efficiency of commercial banks in terms of determining profitable investments, monitoring the management of corporate, handling risk management and mobilizing savings when compared with the efficiency of central banks. However, it may not reflect the exact quality and quantity of financial services provided by financial institutions. Hence, as an indicator commercial-central bank assets is not an accurate but a closer indicator that measures the efficiency of the financial system. (Levine et al., 2000)

c) Private Credit

"Private credit equals the value of credits by banks and other financial intermediaries to private sector divided by GDP" (Levine et al., 2000, p.38). It excludes the credits issued to government, government agencies and public enterprises. Additionally, the credits which are issued by monetary authority and government agencies are also excluded from that definition. Although it does not reflect the amelioration in the information and transaction costs exactly, but it is a better and high level measure to reflect a country's financial system since it includes both financial depth and the efficiency of banks and other financial intermediaries. Moreover, it shows the improvements in private financial system where the governmental agencies are excluded (Levine et al., 2000).

2.10 Descriptive Statistics of Financial Development

When these all measures are considered, private credit is preferred in this study because it has reflected the efficiency of financial development level in a country better than the other measures. Table 2.3 gives the descriptive statistics of the domestic credit to private sector as a percent of GDP for Korea, Malaysia, and Thailand between the years 1971 and 2008, whereas for the Philippines between the years 1971 and 2007.

Table 2.3 Domestic credit to private sector (GDP %)

Country	Min.	Max.	Mean	Median	Std Dev.	Skewness	Kurtosis
Korea	37.30	109.7	64.72	60.72	20.81	0.56	2.07
Malaysia	23.76	210.42	107.02	110.16	54.25	0.12	1.98
The Philippines	17.42	62.22	35.21	33.89	10.83	0.42	2.72
Thailand	20.57	165.72	77.04	77.66	41.25	0.30	2.03

Source: World Development Indicators (2010)

As seen from Table 2.3, in terms of financial development level which is measured by domestic credit to private sector (GDP%), Malaysia has the largest mean of domestic credit to private sector among these four Asian countries. Furthermore, the domestic credit use has surpassed its total output amount on average with 107.02 % of its GDP. The second best developed financial structure belongs to the Thailand with a mean of 77.04 % of its GDP. Korea follows Thailand with a mean of 64.72 % of its GDP. Among the four countries, the Philippines has the lowest level of financial structure with a mean of 35.21% of its GDP.

CHAPTER 3

REVIEW OF LITERATURE

3.1 The Relationship between Foreign Direct Investment and Economic Growth

In the literature it is observed that the relationship between FDI and economic growth is investigated in details. From these studies, it is concluded that FDI could affect the economic performance of a country through different channels and result in different impacts on it. FDI is a capital inflow into a host country by the foreign investors. FDI not only brings capital source into the host and affects the balance of payments of the host country, but also makes changes in the technology and the industrial structure (Duttaray et al., 2008)

The first channel through which FDI affects the economy of host country is the capital source. The FDI inflow has become a major source of capital in the countries where their domestic saving capacities are low and domestic investment capabilities are insufficient. As a result, the countries which have such kind of a shortfall try to compensate it by attracting FDI. By the help of this support, savings and investments may increase in these countries, which also gives rise to the growth of economy. In that aspect, FDI is perceived as a positive contributor to the economy (Duttaray et al, 2008). Additionally, a cross country regression analysis conducted in 69 developing countries, which receive FDI flows from industrialized countries, it is observed that FDI is a complementary to domestic investment (Borensztein et al., 1998). Another study has shown that there is a causality relationship between the FDI inflows and net domestic savings in Jordan. The causality runs from FDI towards savings in this country (Bashier & Bataineh, 2007). However, there are also some other views that conflict with the positive effect of FDI on economy. In some FDI investments, the multinational corporations (MNCs) may tend to take the profit back to the home countries, which is called profit repatriation. In such a situation, the capital outflows may be more than new FDI inflows. Furthermore, it is observed that FDI could lead to crowd out effect on

domestic entrepreneurships. If an economy is surrounded by the foreign firms, there will be no room for the domestic entrepreneurs. This is called *crowding out* effect and it leads to a negative effect on domestic investment and domestic savings (Jenkins, as cited in Duttaray et al.). This claim is supported with an empirical study by Harrison and McMillan (2003). In this study, it is detected that the domestic firms are exposed to crowding out effect by foreign firms. The domestic firms are faced with credit constraints by local banks since the local banks tend to offer more appropriate credit options for the foreign firms. The reason behind is that foreign firms are generally more profitable and have less liquidity risk when compared to the domestic firms. Yet, the profitability of the foreign firms are also got under control in this study, and it is still found that there is still bias against to domestic firms, and foreign firms crowd out the domestic ones and make them to be exposed to more credit constraints. Consequently, FDI may affect the domestic saving and investment of the host country either positive or negative way.

The second channel of FDI affecting the economy of a host country is through the balance of payments. FDI has impacts on the balance of payments of a host country through current account and capital account items. There are conflicting views whether FDI improves or deteriorates these items of balance of payments. When the improvements are considered, according to the IMF's Balance of Payments Manual, FDI inflows are recorded under capital account item as external financial sources. This means that the entrance of the FDI into a host country forms a positive effect on the capital account. Additionally, as the MNCs produce in the host country, the goods which are produced by them decrease the imports and increase the exports. Thereby, this improves the trade balance in the current account item of the balance of payments. Furthermore, through the exports, the exporters have contacts with the world markets in which they are forced to adopt a market discipline. This situation increases the efficiency of the exporters and leads to product innovations (Duttaray et al., 2008). In fact, the changes in the trade balance of a host country may depend on the phases of the investment projects of MNCs. For instance in the early stage of the project, MNCs may require the intermediate goods and services from their home countries in order to start operations. This leads to an increase imports of a host

country. Nonetheless, as the investment projects get mature, there could be a decrease in the exports from the home country to the host country. However, if the home country prefers to continue to produce domestically and export to the host country, this could affect the trade balance of the host country in a negative way (De Mello & Fukasaku, 2000). As a result, the deterioration or the improvement in the balance of payments of the host country could be related with the phases of the projects or the production preferences of the foreign investors such as producing the intermediate goods domestically or not.

The third channel of FDI having impact on a host country is new technology and new production capabilities. According to Dimelis (2005), the positive effect of FDI on the economy by technology transfers and the productivity spillover effect could be in two categories. The first category is *demonstration effect*. In this approach, when foreign firms come to a host country with FDI, they also bring new technology and production techniques which increase the level of productivity. Hence domestic firms begin to imitate new technology of foreign firms instead of spending on research and development and incurring fixed set up costs. Domestic firms adopt not only new production techniques, but also the managerial practices, labor training and export behaviors of the MNCs. Thus, the positive spillover effect has become effective on domestic firms which are competing with foreign ones in the same sector. The second category is *competition effect*. In the competition effect, domestic firms have to adjust themselves in terms of productivity since multinational firms operate in more efficient manner thanks to their better technological facilities. Thereby, domestic ones should catch up with the modern production techniques and close the gap between foreign firms so as to attain market share. In the study of Dimelis (2005), 2589 manufacturing firms in Greece was examined, and it is found that in the years 1992-1997, the spillover effect from FDI has affected the productivity of the firms significantly and positively if the technological gap between domestic and foreign firms is not huge. Moreover, a micro level panel study, which was conducted for Vietnam between the years 2000 and 2005, supports the claim of positive spillover effects of FDI on the host country. Vietnam has been enjoying the positive spillover effects of FDI in various

aspects such as technical assistance, technology transfer and labor training when the foreign firms' presence attains a certain level in the markets. More explicitly, this study shows that the domestic firms with high technology and high human capital benefit more from the positive spillover effects caused by foreign presence than the medium and small size firms (Hoang, 2009). Furthermore, MNCs help the adaptation of the new technology to the local conditions of the host country. In developing countries, especially mature industries may not respond to the changes in the consumption patterns easily and immediately. At that point, MNCs may set up local research and development centers to upgrade existing technology and form more modern industries to catch up the innovations and meet the expectations of the customers (Lall, 2000).

Although the presence of foreign firms in the market triggers the competition between foreign and domestic firms, which forces local firms to improve themselves and operate more efficiently to retain their market shares, locally owned firms could be exposed to crowding out effect because of too much foreign existence in the economy. Host countries may benefit from the positive contributions of the spillover effect of the new technology, managerial and labor skills up to limit where the foreign presence exists. If foreign dominance surpasses this limit, the domestic industries have been affected by the negative spillover effects due to several reasons. One of the reasons for the negative spillover effect is the increase in the cost of inputs resulting from foreign firms (Wang & Yu, 2007). The study conducted in Mexico implies that there is a positive correlation between the FDI flows and the demand for the skilled labor. As foreign firms require more skilled workers, they have to offer more wages to capture the skilled ones (Feenstra & Hanson, 1997). In such a case, either domestic firms will lose the more productive labor unless they offer higher wages, or they have to adjust themselves so as to hire qualified labor by increasing wages (Wang & Yu, 2007). Additionally, the research, which is applied to Chinese manufacturing industry in 2001, proves that if the foreign existence surpasses the two thirds of the Chinese industry, the relationship between spillover benefits and the foreign presence gets into a curvilinear structure. More clearly, the curvilinear relationship means that the

positive spillover effect is increasing as the foreign presence increases, but after a point, these spillover benefits tend to decrease as the foreign presence increases. This pattern is especially more valid for labor intensive industries than technology intensive industries in China (Wang & Yu, 2007). Another reason for the negative effect of foreign presence on domestic firms is the efficient production of foreign firms. Locally owned firms could be exposed to *market stealing* effect because of the presence of foreign firms in the same industry. Foreign ones are able to lower the marginal production cost by exploiting their production advantages and better technology whereas domestic ones cannot. In addition, foreign firms could also be more successful in marketing and could use multinational companies' reputation. Hence, they could produce more and capture more demand than the local ones could. When foreigners enter the market, they start to steal the demand from locally owned firms. As a result of this, the market shares of domestic firms start to shrink and domestic firms begin to cut their productions. Thus, domestic ones may not be able to absorb the fixed cost with less production amount, which decreases their efficiency and profitability. The study which was conducted for Venezuela's manufacturing industry has revealed that the foreign presence may have positive impact on the firms having less than 50 employees. However, this positive impact of foreign presence in the industry has disappeared for the large domestic enterprises which could not benefit from the economies of scale (Aitken & Harrison, 1999). Furthermore, foreign firms could attract more demand by product differentiation and by better quality products with the use of new technology. They capture the highly profitable segments and leave the lower profitable segments to the domestic ones (Mody, as cited in Aitken & Harrison, 1999). According to Zhou et al. (2002), MNCs have superior features over domestically owned firms in terms of marketing expertise, management expertise and efficiency and larger scale of economies. Their study, investigated the FDI effects on domestic firms in China, supports the findings mentioned above. By using their superior capabilities, MNCs capture a larger market share than local firms especially in the cosmetic, soft drink, beer, photo and film industries in China.

The last channel that FDI affects a host country is through the industrial structure. The operations of MNCs have impacts both at horizontal and vertical levels in the industries. At horizontal level, MNCs affect their domestic rivals directly (Fortanier, 2007). According to Lall (2000), if the entry barriers are high for domestic firms to enter the market, MNCs step in the market and provide competitive environment in the economy of a host country. This situation leads to more productive domestic firms which are forced to improve themselves by adopting new technology and to compete with foreign competitors (Fortanier, 2007). Nonetheless, MNCs could hinder the knowledge transmission and positive spillover effects to the domestic firms with the help of formal contracts, paying higher wages to impede labor turnover. Additionally, MNCs prefer to operate in the industries where the locally owned firms have a little capability to copy their new production techniques (Javorcik, 2004). From another aspect, MNCs are not willing to leak their most valuable proprietary assets (non-financial assets) to the competitors since proprietary assets are generated in each firm and provide advantages for its owner. Actually, these types of assets are firm specific and the transmission of them into other firms could be costly and difficult. If the success of MNCs depends on the advantages of proprietary assets, the domestic firms could not benefit from the advantages of the MNCs' firm specific assets (Lall, 2000).

At the vertical level, the spillover effect stemming from FDI affects the backward and forward linkages in the industry structure. The linkage between foreign firms and local suppliers is an example for backward linkage. In the contact of foreign firms and local suppliers, foreign firms give training to the local suppliers directly; such as providing technical assistance to improve the quality and benefit from the innovations effectively. In addition, they make local suppliers to acquire International Standards Organization (ISO) certification to attain the desired material quality. In terms of forward linkage channel as buyers, domestic firms are able to purchase new, more high-quality and less costly intermediate inputs from multinational firms in upstream sectors. As a result, through forward linkage channel, domestic firms could increase the efficiency of productions with better input usage (Javorcik, 2004). However, constructing backward linkage as

mentioned cannot be applied by all multinational firms. To illustrate, some MNCs prefer to operate in assembly-type activities in the host country, so they obtain intermediate inputs from the home countries. Therefore, they export the materials from their own countries instead of getting in contact with local suppliers in the host country. This effect is called *reverse import effect* (O'Sullivan, as cited in De Mello & Fukasaku, 2000).

When it comes to the effect of economic growth on the attraction of FDI, it is observed that FDI inflows into a host country are not determined arbitrarily by foreign investors. To make profitable investments, foreign investors, who have ownership advantages, seek the countries having location advantages. This is the eclectic paradigm of Dunning (1977), also expressed as *OLI*. It categorizes the advantages of foreign firms, host countries and attitudes of foreign firms in the host country. The categories are explained in more details as follows:

- **Ownership-Specific Advantages:** The firm's size, property rights and/or intangible assets, extent of production, product innovation, human capital experience, established position of the enterprise, monopoly power, better resource capacity and usage are the determinants of the ownership advantages of foreign firms.
- **Location-Specific Advantages:** The variables of this category are related to natural and created resources of the country, the cultural factors (e.g. language, customs), infrastructure (e.g. transportation, communication), governmental and legal issues, input prices, quality and productivity (e.g. labor, energy, materials).
- **International-Incentive Advantages:** These advantages result from the ability of firm's protection itself from market imperfections or the ability of exploiting market imperfections. Moreover, avoidance or exploitation of government intervention (e.g. quotas, tariffs, price controls, tax differences, and the ability of controlling the market (e.g. competitors) and handling buyer and other uncertainties are also advantages that can be included this category.

In addition to these, there are many studies that point out the market size (measured by GDP) of a country as location variable in the attraction of FDI in the literature. If the country's market size increases with economic growth, this country is perceived as profitable market potential by foreign investors, and this raises the expectations of the foreign investors from the host country. Moreover, because increasing aggregate demand with economic growth requires more investments, this makes foreign investors to bring FDI into such a country. Such a growing economy supported with investments results in better opportunities and better infrastructure, which increases the profit potential of the investors. This hypothesis is called *growth led FDI* (Zhang, 2001).

The growth driven FDI hypothesis has been supported in empirical studies. Chakrabarti (2001) has found that for 135 countries in the year 1994, FDI flows into the countries are positively correlated with market size which is measured by GDP and the growth of GDP. The study conducting for Central and Eastern Europe (CEE) and Baltic countries has also shown that per capita GDP and FDI attraction have robust and positive correlation. (Babic & Stucka, 2001). In addition, Root and Ahmed (1979) claim that developing countries with high growth rates of GDP with additionally substantial urbanization, advanced infrastructure and political stability are very successful in terms of attracting FDI.

3.2 The Relationship between Financial Sector Development and Economic Growth

During 1960s and 1970s, the indigenous entrepreneurs had narrow opportunity to access capital for the use of advanced technology and the skilled labor force in the less developed countries. In addition, there was a government intervention such as controlling interest rates, tariff protection and import licenses. Low cost bank finance was available only for the investments of small urban group. This has created a discrepancy in income inequality among a small wealthy group and a large poor group, and also leads to less domestic saving. As a solution, a repressed economy could get better with the liberalization in financial markets such as

liberalization of interest rates and increase in efficiency of credit allocation. For instance, an efficient capital market deploys capital stock in order to push the average return into a higher level in the equilibrium in a developed country. In this way, the rate of return (i.e. interest rate) is determined by the markets and higher rate of returns provide higher saving opportunities. Thereby, the efficiency of financial sector could be raised (McKinnon, 1973). For instance, a research applied to Asia and Latin America supports the claim that the liberalization of the interest rates has raised the nominal interest rates and saving in these countries (Gupta, 1987). Another empirical study covering the less developed Asian countries also justifies the claims above. The real rate of interest has a positive impact on domestic saving and the economic growth of these countries (Fry, 1978). Furthermore, different financial tools offer many options for domestic savers to form their own portfolios instead of self financing. It also closes the income inequality between the groups by raising the wage rates and raises employment. This occurs in such a form; due to higher interest rates relative to the wage rates, investing in capital may not be a wise action and the elasticity of substitution of labor against capital comes into the forefront, which raises the wage rates (Shaw, 1973).

In terms of the relationship between economic growth and financial sector development, Patrick (1966) comes with a *supply leading* approach which claims that the causal relationship runs from financial sector development towards economic growth. According to him, financial development is not an exact precondition for economic growth; however, it has crucial role at the beginning of the real growth. In this approach, financial sector development contributes to economic growth in several ways.

Financial intermediaries increase the total wealth since they provide more efficient allocation of a given amount tangible wealth by leading to changes in asset ownership and its composition among asset holders. They also promote saving, investment and capital accumulation by offering incentives (i.e. rate of return) through various types of financial instruments, which leads to economic growth (Patrick, 1966; Goldsmith, 1969). In order to look at the relationship between

saving, investment, capital accumulation and growth more closely, the functions expressed as follows explain the concept in a well manner. Pagano (1993) developed an endogenous growth model which is called *AK* model and further theoretical linkage between financial development and economic growth has been developed as follows (as cited in Habibullah & Eng, 2006):

$$Y_t = A_t K_t \tag{3.1}$$

Equation 3.1 is where *Y* is the total output, *K* is the amount of capital accumulation, and *A* is the state of technology at time *t*. In the model, output is a linear function of aggregate capital stock. The model is constructed by assuming that the economy is closed, there is no population growth and no technological progress.

In an economy, gross saving and gross investment are expressed as:

$$sY_t = S_t \tag{3.2}$$

$$\phi S_t = I_t \tag{3.3}$$

in Equation 3.2, *s* is the saving rate of the private savings and *S* is the gross saving at time *t*. *I* implies gross investment at time *t*, and ϕ denotes the financial system efficiency in Equation 3.3. Gross investment increases as the financial efficiency and saving rate increase.

The capital accumulation at time *t+1* is composed of the undepreciated part of capital accumulation and gross investment at time *t*:

$$K_{t+1} = I_t + (1- \delta) K_t \tag{3.4}$$

where δ denotes the depreciation rate. As seen from Equation 3.4, the capital accumulation for the time *t+1* is raised with an increase in the investment at time *t* since the current capital amount can be depreciated with δ within the years.

By the help of Equation 3.1 where there is no technological progress (*A=1*), the steady state output growth is denoted at time *t+1* as:

$$g_{t+1}=(Y_{t+1}/Y_t) -1 = (K_{t+1}/ K_t) - 1 \quad (3.5)$$

When K_{t+1} in Equation 3.4 is substituted in Equation 3.5, then Equation 3.5 is rewritten as:

$$g_{t+1}=(I_t + K_t - \delta K_t - K_t) / K_t = (I_t / K_t) – \delta \quad (3.6)$$

Equation 3.1 can also be expressed as $K_t = Y_t /A_t$. The steady state output growth is obtained by substituting K_t with Equations 3.2 and 3.3 into Equation 3.6 with dropping time indices:

$$g=(I / (Y /A)) – \delta = A(I/Y) – \delta = A \phi s – \delta \quad (3.7)$$

In Equation 3.7, it is seen that growth rate increases with an increase in the state of technology (*A*), the saving rate (*s*) and the efficiency of financial system (ϕ).

In light of this theoretical frame, the role financial institutions have gained an importance in this loop. If the number and variety of financial institutions are numerous in an economy, the way of collecting individual funds (savings) and transferring these funds into the investments would be easier and more efficient in such a competitive environment. Due to the opportunities of well developed financial system, the borrowers and lenders could have different options to save and invest more efficiently. This effective mechanism promotes a rise in gross investment, capital accumulation and economic growth (Habibullah & Eng, 2006). Moreover, Bencivenga and Smith (1991) also support this claim by emphasizing the activities of banks as financial institutions. According to their claims, banks make risk-averse savers deposit their money into them in return for offering interest. Then, banks run these individual funds by lending firms which need funds for their

investments. In this way, they reduce the firms' self financing, and firms are able to use their own capital for other liquidity needs.

On the other hand, financial institutions convey resources from traditional sectors to modern sectors in order to support more efficient projects. They also encourage and induce the entrepreneurs into these modern sectors. More explicitly, they motivate the entrepreneurs to come into an action in these businesses by opening them new horizons and imposing the idea that *think big* (Patrick, 1966).

One other function of the financial intermediaries is collecting and analyzing information for their members. The investors who prefer intermediaries obtain valuable information with less cost. Hence, they acquire information about aggregate state of technology. In this way, investors would allocate their funds into the most profitable and reliable projects, which promotes the technology (Greenwood & Jovanovic, 1990). This claim is supported by the empirical study of King and Levine (1993) which is a cross country analysis of 80 countries between the years 1960 and 1989. In this study, it is obtained that financial services promote the rate of physical capital accumulation and provide improvements in the allocation of capital to increase efficiency.

Another function of financial development is providing capital for firms through the different tools which diversify the liquidity and idiosyncratic risk. The existence of financial markets makes the investors to invest in different firms with different amounts. Therefore, the investors make contributions to the forming capital for firms with less risk by diversifying their portfolios (Levine, 1997).

All these mentioned imply that the developments in the financial markets, institutions and tools have affected the economies of countries in better way from different aspects. For instance, Granger causality tests are applied to India, Pakistan and Sri Lanka in an empirical study, and the test results support Patrick's supply leading hypothesis, which implies economic growth could be promoted by financial development (Ahmed &Ansari, 1998). Besides that, a panel data analysis which is

applied to 13 Asian developing countries has proved that the financial development gives rise to economic growth in these countries. By considering this view, developing countries are suggested to follow the policies supporting the developments in the financial systems (Habibullah & Eng, 2006). Financial development causes economic growth in not only for developing countries but also high income countries. Kemal et al. (2007) have applied panel data analysis for 19 high income countries between the years 1974-2001. In this study, they have found that there is a significant and positive relationship between the overall size of financial development and economic growth.

When it comes to the direction of causal relationship from economic growth to financial sector development, Patrick's (1966) *demand following* hypothesis comes to the forefront. According to his demand following approach, the reason for building financial institutions and widening the number and variety of financial services is to meet the demand for these services by investors and savers. For instance the reason for not having developed financial services in underdeveloped countries is that there is no such a demand for these services. According to this view, the creation of financial services is not a one step process. The evolution of financial services is shaped continuously depending on the economic environment and the changes in the individual motivations, attitudes and preferences. The demand following mechanism works in such a way: as the growth rate of real national income is increasing, there is a great demand for external funds by enterprises. In other words, firms' demands for the savings of individuals have increased when they are not able to finance themselves internally. In such a case, the needs for financial institutions and their services have increased in order to collect the savings and transfer them to the firms. Financial institutions offer both savers and investors more options to use capital more wisely. Additionally, the growth rate of each industry is different in a growing economy. Some grows at an increasing rate whereas some cannot. Therefore, the responses of financial institutions for the sectors are also different depending on this fact. They promote to the fast growing industries more than slow growing ones in terms of supplying capital (Patrick, 1966). There are some empirical studies conducted in the literature

by considering this view. Odhiambo (2007) has investigated sub-Saharan Africa countries by Granger causality method and has found that Kenya and South Africa have supported demand following hypothesis. On the contrary, the study of Jung (1986) which has been applied on 56 countries claims that the causality direction from economic growth towards financial development is valid for developed countries whereas the reverse causality direction is common among less developed ones (as cited in Odhiambo, 2007). This view has been also supported by Shan et al. (2001). In their study, it is proved that economic growth leads to financial development in Australia, Canada, Denmark, China, Japan, Italy, UK and USA most of which are developed countries.

3.3 The Relationship between Foreign Direct Investment and Financial Sector Development

Economic growth, exchange and inflation rates, the quality of labor force, the trade openness, infrastructure conditions, and legal and political factors are so crucial determinants in the FDI attraction into the host country (Hailu, 2010). In addition to these, the financial sector development in the host country may also be an effective factor during the decision phase of investor's country selection. The financial development level of host country can affect the FDI attraction through two channels:

The first channel is through the stock market. According to Hailu (2010), the availability of the stock market has become crucial determinant for the foreign investors. Foreign investments could be either setting up new business (greenfield investment) or acquisition of the shares of an existing business. If the foreign investors prefer to transfer FDI into the host country through acquisition of the existing firm's shares, the investors could buy some shares of the direct investment enterprises and test the business environments via stock market channels before bringing FDI. In contrast, if foreign investors choose to abdicate from the investments, they could also benefit from the stock market to sell out their shares. These facilities ease the investment attitude (entry or exit) of the foreign investors

and make them feel more comfortable about investment decisions. In the study of Hailu (2010), positive but less robust relationship between stock market availability and FDI flows has been detected in the African countries between the years 1980 and 2007. However, the availability of the stock market could also affect FDI in a negative way. Through liberal and well functioning stock markets, foreign investors could tend to prefer portfolio investment in any business environment instead of bringing FDI. These private portfolio investments crowd out FDI and generate a negative effect on FDI inflows (Hailu, 2010).

The second channel of financial system affecting FDI is through the credit market. A well functioning credit market is very crucial for foreign investor since the quality and the development level of the financial sector in the host country affects the borrowing extension of the foreign firms which would require a capital rise for the innovative activities and their productions (Hermes & Lensink, 2003). Moreover, as Levine (1997) has stated that financial intermediaries allocate the resources to the most productive firms and entrepreneurs. Hence, this gives rise to technological innovations. In other words, the more developed financial system in a country, the more technological advances occur in it. In such a technology promoting environment, foreign investors could adapt their own new technology and production methods to the host country more easily. Similarly, according to study of Huang and Xu (1999), research and development projects financed by multibanks in an economy promote technology and innovations more and better when compared to the projects financed by single banks. On the other hand, a well developed financial system could be important and significant determinants in the FDI attraction since foreign firms usually make financial transactions; such as payments to their employees, local customers and suppliers in the local currency. Thus, it so natural for investors to select a country surrounded by many and well developed financial institutions (Deichmann et al., 2003). In the empirical study of Deichmann et al. (2003), bank credits, which are attractive for foreign investors, are found important and significant determinants of FDI inflows into Turkey.

When it comes to the effect of FDI on the financial sector development, in the existing literature, there are few studies that argue whether FDI contributes to financial sector development of the host country or not. The presence of foreigners could affect the domestic financial markets through various ways.

One way is that FDI can improve the stock market in the host country. Foreign firms may prefer to finance part of their investments with external capital or they finance their investments by selling shares. Alternatively, they may also make investment through buying the shares of existing firms from the stock markets. As a result, the foreign presence in the stock market increases the liquidity of the stock market (Zakaria, 2007). This claim is supported with the study of Claessens et al. (2001). The study has investigated 77 countries and has claimed that there is a positive correlation between FDI presence and stock market capitalization.

Another way of FDI affecting the domestic financial system is through the domestic credit market. It is claimed that FDI provides the inflows of funds into domestic financial markets and foreign presence ease the credit constraints that local firms are exposed to in the developing countries (Zakaria, 2007). Purely domestic private firms may face with more credit constraint than foreign competitors since foreign firms may be perceived more profitable and less risky than domestic ones by financial institutions. Domestic firms, however, may be still crowded out from the domestic credit markets even if the profitability of foreign firms has been got under control. Additionally, domestic private firms are also faced with credit constraint when compared to their state-owned competitors (Harrison & McMillan, 2003). State-owned enterprises do not have a problem of finding resources since the government may distort the financial markets to attain its own goals. Hence, the government may make financial markets allocate resources to state-owned ones rather than more profitable and productive private firms as observed in China (Héricourt & Poncet, 2009). Actually, all of these are the signs of inefficient working mechanism of domestic financial markets. Therefore, purely domestic firms seek for cross border relationships with foreign partners to deal with such financial distortions and market imperfections. They want to contact with foreigners

since foreign firms are powerful and developed in terms of financial and legal status. (Huang, as cited in Héricourt & Poncet, 2009). Thus, FDI could help decrease the inefficient allocation of resources in the financial markets and also increase the use of domestic credit given to private sector rather than the state-owned enterprises, which reflects the financial development level of a country. In short, it may help the financial markets to work more efficiently. This view is supported with the study of Héricourt & Poncet (2009). In this study, it has suggested that the private firms are faced with more credit constraints than state-owned ones and FDI inflows have shown up to reduce the imperfections that domestic firms face with at home. The study of Harrison et al. (2004) also proved that the private firms possessing foreign assets have been exposed to less credit constraints in the financial markets and they are more likely to benefit from the international capital markets. In the light of these, Zakaria (2007) has investigated the causality relationship between FDI and financial sector development on 37 developing countries by Granger causality test. He has found that out of 37 countries, 5 have a causal relationship runs from FDI to financial sector development which is assessed by domestic credit given to private sector. In addition to this, there are 5 countries having bidirectional causal relationship between FDI and financial sector development.

One other way that FDI affects financial sector development is that the inflows come into the host country as foreign banks. This impacts domestic financial markets directly as both benefits and costs. In terms of benefits, the entry of foreign banks into the domestic financial system may improve the quality, variety and availability of financial services and products. Thus, it promotes financial innovation. Furthermore, foreign banks posses more sophisticated and innovative risk management tools, which decreases the cost of obtaining and processing information of potential borrowers. Another benefit is that foreign bank businesses demand regulatory and legal frameworks to exist in the financial system from government agencies such as bank supervisory and arrangements on corporate risk management practice and rating firms, which increases the efficiency of domestic financial system. Moreover, it could be said that foreign presence in the domestic

financial system provides financial stability during the instable periods. In such instable periods, depositors tend to convey their funds into the foreign banks rather than domestic ones since foreign banks are generally perceived more trustworthy than domestic competitors. Thereby, the domestic funds remain in the domestic financial system instead of being transferred to abroad (Levine, 1996; Agénor, 2003; Coppel & Davies, 2003). There may be such benefits of foreign bank existence; however, their existence may also create disadvantages in the domestic financial system. One of the disadvantages is that foreign bank presence may lead to large economic costs. Foreign banks may be more profitable since they are able to decrease the operational cost because of their better technology and products. This situation may create a pressure on the domestic banks to merge with them to increase their profitability. Nonetheless, this weakens the competition and raises the concentration in domestic financial markets. High concentration harms the overall banking efficiency and the availability of credit because there would be lower deposit rates and high loan rates in the weak competition. Another drawback is that if the economy goes badly and there is severe recession, or foreign banks are not able to make profitable operations, they tend to leave the domestic market abruptly and close their doors, which may distort the running of the domestic financial markets (Agénor, 2003).

CHAPTER 4

DATA AND METHODOLOGY

4.1 Definitions of Variables and Data

The variables used in this study are economic growth, FDI and financial sector development level.

Economic growth is measured by annual growth rate of output (GDP) per capita. It is represented by PCG. Different population sizes of countries and the standard of living reflected by evolution of output per capita are determining factors of the PCG as a proxy of economic growth. In addition to these, the use of annual growth rate of output per capita, instead of the amount of output per capita in any currency, eliminates the misleading interpretations resulting from exchange rate movements and the different pricing mechanisms in each country (Blanchard, 2006). This variable has been used in the studies of Omran and Bolbol (2003) and Hermes and Lensink (2003). The logarithmic transformation is not applied on this variable since the logarithm of negative values is undefined.

In this study, foreign direct investment is represented by FDI and it is the ratio of FDI inflow to the total output (GDP). This ratio has been used in many empirical studies. According to Duttaray et al. (2008), it is difficult to determine appropriate price index when adjusting the FDI amount in any currency. Hence, it is better to prefer this ratio as a variable. Choong et al. (2005), Elboiashi et al. (2009), Faras and Ghali (2009) are some examples in which this ratio has been preferred. The FDI variable is transformed into the logarithmic form to narrow the variation of FDI variable.

In terms of financial sector development level definition, it is difficult to determine a variable that directly and totally reflects the financial development level of a country. Therefore, some variables are defined to measure the depth and efficiency of financial systems. Liquid liabilities, commercial-central bank and private credit

are the variables used as a proxy of financial development level in the literature. Among them, the private credit (i.e. domestic credit given to private sector) is superior over rest of the two in terms of reflecting the depth and efficiency of financial structure in an economy. (Levine et al., 2000). As a result, the domestic credit to private sector as a percentage of GDP is preferred and denoted by DC in this study. Yet, these values are also transformed into the logarithmic form to narrow the variation. There are also some studies which prefer this variable when measuring the financial development level (Habibullah & Eng, 2006; Arestis et al., 2006; Ang, 2009).

All the variables are obtained from World Development Indicators of World Bank (2010) except FDI. The FDI values are obtained from United Nations Conference on Trade and Development (UNCTAD) (2010) statistical data base. The selected countries in this study are East Asian countries; namely Korea, Malaysia, the Philippines and Thailand. These countries are located in the same geographical area. Furthermore, they have adopted liberal investment policies to attract FDI. They have also taken place as investment icons in the global financial markets and have attained their goals by attracting huge amount of FDI. Consequently, their economies have grown steadily in the last 20 years because of these capital flows (Dondeti et al., 2008; Wongbangpo & Sharma, 2002). Moreover, the availability of the variables' data is also important criteria for the country selection. Generally, the time line in this study lies between 1971 and 2008. However, Korea, Malaysia and Thailand are examined between the years 1971 and 2008 whereas the Philippines is examined between the time line 1971 and 2007 due to its missing values of 2008.

4.2 Methodology

In the literature, the relationships between the variables are examined by main econometric methods. One of the well known these methods is Engle and Granger's (1987) *Granger Representation Theorem*. This method reveals the long run relationship in bivariate models, if the cointegration exists. According to this methodology, if the series of independent variables are non-stationary with the integrated of order one (i.e. *I(1)*), and they do not move away from each other in the

long run, then the residual series in the regression model of these variables can be stationary at level (i.e. *I(0)*). In such a situation, it can be said that these variables are cointegrated and they move together in the long run. These independent series must be *I(1)*, which is a prerequisite for applying this methodology. If cointegration is detected between the variables, short and long run causality relations are examined in more details by the help of error correction method. On the other hand, if the model is based on multivariate systems, Johansen (1988, 1991) and Johansen and Juselis (1990) are used to detect the cointegration for multivariate cases.

However, in this study autoregressive distributed lag (ARDL) approach has been applied instead of the methodologies mentioned above. There are some reasons behind the preference of this methodology. The first reason is that ARDL approach is more efficient when the study has small sample sizes (Pesaran and Shin, 1997). There are empirical studies employing this method in the literature. For instance, Mah (2000) has applied ARDL approach for the Korea's aggregate import data which covers the period 1971-1988. Another study with ARDL which has a sample size of 20 has been conducted by Pattichis (1999). Moreover, Ghatak and Siddiki (2001) also have used ARDL method to estimate the virtual exchange rates in India for the years of 1965-1996. In this study, the sample size for each country is 38 except the Philippines having 37. Thus, ARDL is an appropriate method for small sample size studies. The second reason is that ARDL can be applicable when the series are *I(0)*, *I(1)* or mixture of both. It means that there is no need to have a prerequisite that the variables must be *I(1)*. As a result, this method removes the prerequisite of same order integration for cointegration analysis (Pesaran & Pesaran, 1997; Pesaran et. al, 2001). In this study, the variables of countries are either *I(0)* or *I(1)*; thus, ARDL approach is more preferable than any other cointegration methodologies. The final reason is that this methodology determines the appropriate orders of the ARDL model, and this eliminates the serial correlation of residuals and mitigates the problem of endogenous regressors (Pesaran & Shin, 1997).

4.3 Application of ARDL Procedure

MICROFIT 4.0 econometric software program and the manual of this program have been used to apply ARDL method in this study (see Pesaran and Pesaran, 1997). Before starting to apply ARDL method, it is required to check the integration order of variables by the unit root tests such as Augmented Dickey Fuller (ADF) (Dickey & Fuller, 1979) and/or NG-Perron (Ng & Perron, 2001) tests. As implied before, if the integration orders of variables are mixture of *I(0)* and *I(1)*, ARDL could be a better methodology than any other cointegration methodologies. In the application of ARDL, the first procedure method is detecting the cointegration among the variables with the bound testing procedure. This enables to detect that whether the independent variables (regressors) are forcing variables of the dependent variable or not. If it is detected that the regressors are forcing variables of the dependent variable, then it can be said that there exists a long run relationship among the variables (Pesaran & Pesaran, 1997; Pesaran et al., 2001). In this study, the ARDL approach has been applied to each Asian country to examine the relationships among economic growth, foreign direct investment and financial sector development. There are three models have been constructed for each county as follows:

$$\Delta PCG_t = a_0 + \sum_{i=1}^{p} a_{1i}\Delta PCG_{t-i} + \sum_{i=1}^{p} a_{2i}\Delta FDI_{t-i} + \sum_{i=1}^{p} a_{3i}\Delta DC_{t-i} + \theta_1 PCG_{t-1} + \theta_2 FDI_{t-1} + \theta_3 DC_{t-1} + \varepsilon_{1t} \quad (4.1)$$

Model 1 as expressed in Equation 4.1 has been set up to detect whether foreign direct investment and financial sector development are forcing variables of economic growth in the long run.

$$\Delta FDI_t = b_0 + \sum_{i=1}^{p} b_{1i}\ \Delta FDI_{t-i} + \sum_{i=1}^{p} b_{2i}\Delta PCG_{t-i} + \sum_{i=1}^{p} b_{3i}\Delta DC_{t-i} + \lambda_1 FDI_{t-1} + \lambda_2 PCG_{t-1} + \lambda_3 DC_{t-1} + \varepsilon_{2t} \quad (4.2)$$

Model 2 has been set up to detect whether economic growth and financial sector development are long run forcing variables of foreign direct investment inflows into the host country, and expressed in Equation 4.2.

$$\Delta DC_t = c_0 + \sum_{i=1}^{p} c_{1i}\Delta DC_{t-i} + \sum_{i=1}^{p} c_{2i}\Delta PCG_{t-i} + \sum_{i=1}^{p} c_{3i}\Delta FDI_{t-i} + \gamma_1 DC_{t-1} + \gamma_2 PCG_{t-1} + \gamma_3 FDI_{t-1} + \varepsilon_{3t} \quad (4.3)$$

Model 3 as denoted in Equation 4.3 has been constructed to determine whether economic growth and foreign direct investment are long run forcing variables of financial development or not.

In the models, Δ is the difference operator. ε_{1t}, ε_{2t} and ε_{3t} are the error terms of Model 1, Model 2 and Model 3, respectively. Besides, in the model *p* is optimal vector auto regressive (VAR) lag length of each model. According to Kamas and Joyce (1993), *p* is determined to make the error terms of the model have no serial correlation (as cited in Peker and Gocer, 2010). The optimal VAR lag length is selected according to Schwarz Bayesian Criteria (SBC) since SBC chooses the parsimonious model (Jajil and Ma, 2008). When the parameters are considered, a_0 is the intercept term and a_1, a_2 and a_3 are the coefficients expressing the short run linkage whereas θ_1, θ_2, and θ_3 are the parameters implying long run relationship in Model 1. Similarly, b_0 is the constant and b_1, b_2 and b_3 are the coefficients expressing the short run linkage whereas λ_1, λ_2 and λ_3 are the parameters implying long run relationship in Model 2. For Model 3, c_0 is the intercept term, and c_1, c_2 and c_3 denote the short run linkage while δ_1, δ_2 and δ_3 denote the long run relationship coefficients. Thus, θs, λs and δs are tested under the null hypothesis that *there exists no long run relationship among the variables*. The null hypotheses of these 3 models can be also expressed as follows:

H_0: $\theta_1 = \theta_2 = \theta_3 = 0$

H_0: $\lambda_1 = \lambda_2 = \lambda_3 = 0$

H_0: $\gamma_1 = \gamma_2 = \gamma_3 = 0$

After constructing the null hypothesis, the computed F-statistic for each model is compared with the critical values of Pesaran and Pesaran (1997) for the decision of accepting and rejecting the null hypothesis. This critical values table has different lower and upper limits for different number of regressors, and whether ARDL model has an intercept and/or trend. Besides, the integration order of variables also affects the decision rule about the acceptance or rejection of the null hypothesis. There could be three different cases to make decision. In the first case in which all the variables are *I(0*), then lower limit is regarded as critical value. When the F-statistic exceeds the lower limit, the null hypothesis of no cointegration among the variables has been rejected. In the second case, if all the variables are *I(1)*, the critical value is considered as upper limit. If F-statistic exceeds the upper limit, the null hypothesis of no cointegration among the variables has been rejected. In the third case, the variables are mixture of *I(0)* and *I(1*), both lower and upper limits are considered together. If F-statistic is smaller than lower limit, the null hypothesis cannot be rejected. If F-statistic lies between the lower and upper limit, then the result is inconclusive about acceptance or rejection of null hypothesis. When the F-statistic exceeds the upper limit, then the null hypothesis could be rejected. Hence, it is important to specify the each variable's integration order with unit root tests to determine the critical values.

The second step starts when the cointegration has been detected in the first step of ARDL for each model. If cointegration exists among the variables, then the short and long run ARDL models are constructed with the appropriate lag values by MICROFIT 4.0 econometric software. Schwarz Bayesian Criteria (SBC) could be preferred for the selection of appropriate lags by considering the suggestions of Pesaran and Shin (1995). After the model selection, it is possible to see the significance, direction and unit effects of the regressors on dependent variable both in the long and short run. Nonetheless, if cointegration has not been detected among the variables, there is no need to construct long and short run models.

Finally it is wise to make diagnostic checking to see the validity of the models. The test statistics are also obtained by MICROFIT 4.0 software. Lagrange multiplier test checks whether there exist serial autocorrelation of residuals or not. Moreover, it is important to test the variance of the residuals are homoscedastic or not. Additionally, it is also possible to check the specification of the models by Ramsey's Reset test, and check the stability of the coefficients in the models by cumulative sum of recursive residuals (CUSUM) test and the cumulative sum of squares of recursive residuals (CUSUMSQ) test.

CHAPTER 5

ARDL TEST RESULTS

All the steps of ARDL methods are mentioned in section 4.3 have been applied for Korea, Malaysia, the Philippines and Thailand, separately and respectively. The test result will be given in the following sections.

5.1 Korea

Before starting the ARDL analysis, it is required to determine the integration order of each variable for Korea. The integration orders of the variables are not prerequisite for ARDL method, but they are necessary when determining the critical values for testing cointegration. ADF unit root test has been applied to detect whether the series is stationary or not. In the literature, it is very possible to come across with the use of this test in many studies (Sari et al., 2008; Choong & Lim, 2009; Ang, 2009). However, Perron (1989) has claimed that if there is one breaking time in the trend function, the standard test result cannot reject the null hypothesis that the series has a unit root (i.e. the series is non-stationary). Thus, Phillips-Perron (PP) unit root test has been developed as a more robust method than ADF unit root test. Yet, Phillips-Perron (PP) test is modified by NG-Perron unit root test which is better for small size distortions and has more power relatively to other test (NG and Perron, 2001). As a consequence, ADF and NG-Perron unit root tests are selected to check the stationary of the variables. The unit root test results for Korea are obtained by EViews 6.0 econometric software program and given in Table 5.1:

Table 5.1 The unit root test results of Korea

		ADF		NG-Perron	
Level		**T-statistic**	**Lag**	**MZa-statistic**	**Lag**
Intercept	PCG	-5.2168*	0	-18.2631*	0
	FDI	-3.1320**	0	-12.5725**	0
	DC	0.4257	0	0.8360	1
Intercept and trend	PCG	-5.3920*	0	-18.3722**	0
	FDI	-4.2865*	0	-15.2944***	0
	DC	-2.2189	0	-6.3003	0

1st difference		**ADF**		**NG-Perron**	
		T-statistic	**Lag**	**MZa-statistic**	**Lag**
Intercept	PCG	-5.7509*	3	-20.3968*	0
	FDI	-5.7530*	2	-0.1236	6
	DC	-4.1989*	0	-16.9847*	0
Intercept and trend	PCG	-5.7080*	3	-17.2298***	0
	FDI	-5.6740*	2	-15.3422***	0
	DC	-4.2397*	0	-17.0361***	0

Note: *, **, *** denote the significance level at 1%, 5% and 10% respectively. T test statistics of ADF are compared with the critical t values given in the test result. MZa test statistics of NG-Perron are also compared with critical values given in the test results.

As seen from Table 5.1, the results of ADF unit root test and NG-Perron unit root tests are generally consistent with each other. Both of these tests have null hypotheses that *the series has a unit root* (i.e. the series is nonstationary). It seems that PCG series is stationary at level (i.e. *I(0)*) since the null hypotheses are rejected at level. As for FDI, it is concluded that null hypotheses are rejected at level for both tests, so this variable is also *I(0)*. Yet, DC variable is nonstationary at level since the null hypotheses cannot be rejected at level. However, it is stationary at first order difference level (i.e. *I(1)*) according to test results. As a conclusion, since two types of integration order of variables exist, both lower and upper critical values are needed to test the significance of F-statistics.

The first step of making ARDL analysis is testing the cointegration among the variables. The optimal VAR lag lengths of the models for Korea are determined as 1 with considering SBC. By selecting the optimal lag length, each model (i.e. Model 1, 2 and 3) is tested for cointegration analysis to detect the long run forcing variables of it successively. The null hypotheses are given in Table 5.2. In the first hypothesis, it is tested whether the FDI and financial sector development level are long run forcing variables of the Korea's economic growth or not. The second hypothesis checks that whether the economic growth and financial sector development level are long run forcing variables of the Korea's FDI inflows or not. In the third hypothesis, it is tested whether economic growth and FDI are long run forcing variables of financial sector development level or not in Korea. For each model, the null hypothesis has been constructed as *there exists no long run relationship among the variables*. The calculated F-statistics and the critical values are given in Table 5.2 and Table 5.3:

Table 5.2 The null hypotheses for Korea

Cointegration Hypotheses	F-statistic
1. F(PCG| FDI, DC)	7.1195*
2. F(FDI| PCG, DC)	13.2529*
3. F(DC| PCG, FDI)	1.5710

Note: *, **, *** denote the significance level at 1%, 5% and 10% respectively.

Table 5.3 The critical value bounds of the F-statistic

Number of Regressors: 2	Lower Limit	Upper Limit
1%	5.288	6.309
5%	3.793	4.855
10%	3.182	4.126

Source: Pesaran & Pesaran (1997). Intercept and no trend case.

The calculated F-statistic of Model 1, which is 7.1195, exceeds the upper limit of 1% significance level. Thus, the null hypothesis of Model 1 that there exists no long run relationship among the variables is rejected at 1% significance level. As a result, it can be concluded that FDI and financial development level are long run

forcing variables of Korea's economic growth, which means cointegration exists among the regressors and the dependent variable. When it comes to null hypothesis of the Model 2, the F-statistic which is 13.2529 also exceeds the upper limit of 1% significance level. This means that the null hypothesis of no cointegration is rejected at 1% significance level, and it is concluded that Korea's economic growth and its financial development level are long run forcing variables of its FDI inflows. On the other hand, it is detected that there exists no cointegration for the null hypothesis of Model 3 because the F-statistic is less than the lower limits of any of the significance levels, which means economic growth and FDI are not long run key determinants of Korea's financial sector development.

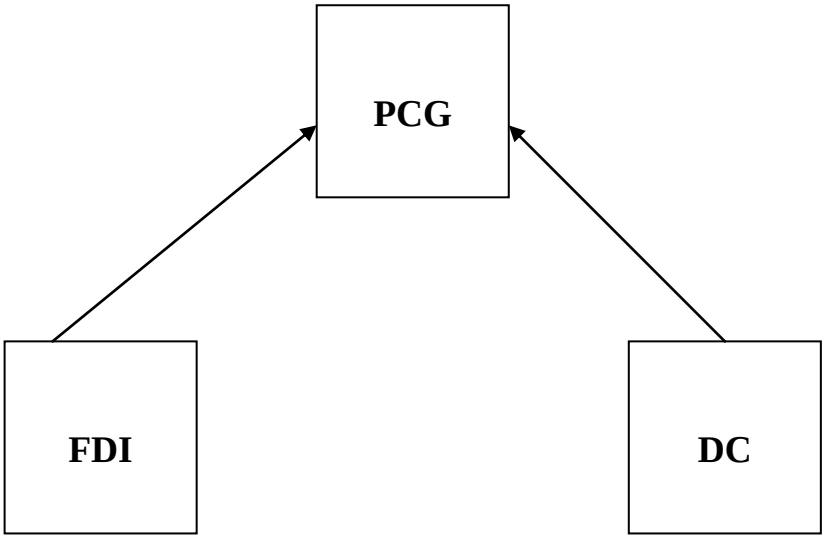

Figure 5.1 FDI and DC are long run forcing variables of PCG in Korea.

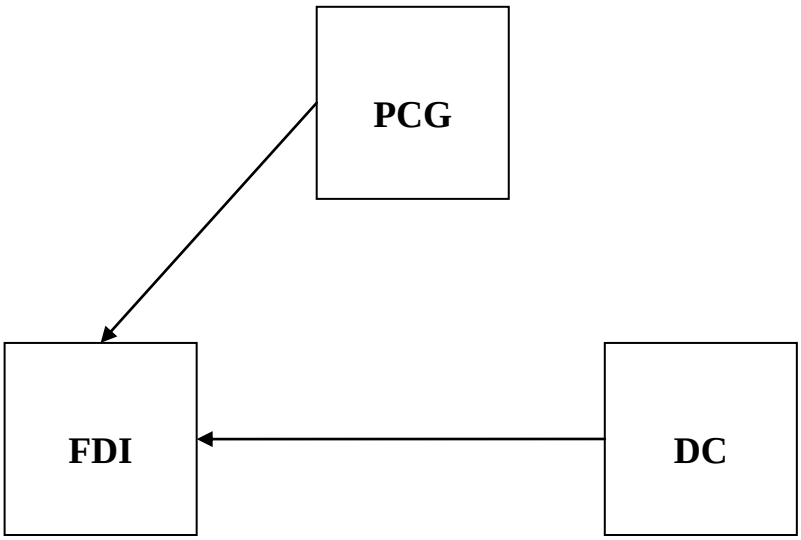

Figure 5.2 PCG and DC are long run forcing variables of FDI in Korea.

As a second step of ARDL procedure, long run and short run relationships could be identified by ARDL method for Model 1 and Model 2 separately and respectively since it is detected that there exists cointegration among the regressors and the dependent variables in each model (see Figure 5.1 and Figure 5.2). However, there is no need to construct long run and short run dynamics for Model 3 since no cointegration has been detected among the variables of the model.

The long and short run dynamics of Model 1 for Korea have been given in more details. The long run relationship among the variables of this model is expressed in Equation 5.1 as follows:

$$PCG_t = \beta_0 + \sum_{i=1}^{k} \beta_{1i} PCG_{t-i} + \sum_{i=0}^{l} \beta_{2i} FDI_{t-i} + \sum_{i=0}^{m} \beta_{3i} DC_{t-i} + u_{11t} \qquad (5.1)$$

For this long run relationship analysis, the most appropriate ARDL (k, l, m) model has been selected by determining the maximum lag values; k, l, m according to Schwarz Bayesian Criteria (SBC) by the MICROFIT 4.0 software. In addition to

that, 1 lag of dependent variable is included in the model to guarantee that lagged explanatory variables exist in the error correction model (ECM) (Sari et al., 2007). As a consequence, ARDL (1, 0, 1) model is the selected to represent the relationship among the regressors and the dependent variable. The details are tabulated in Table 5.4:

Table 5.4 The estimated long run coefficients of ARDL (1, 0, 1) model of Korea (Dependent Variable: PCG)

Regressors	Coefficient	Standard Error	T-Ratio[Prob.]
Intercept	30.3212	11.6022	2.6134[.014]**
FDI	2.5745	1.5488	1.5390[0.107]
DC	-12.4527	6.0854	-2.0463[.050]***

Note: *, **, *** denote the significance level at 1%, at 5%, at 10%, respectively.

It is good to remind that all the variables are in the logarithmic form except PCG. Therefore, it may not be possible to interpret the exact unit effect of regressors on the dependent variable; however, the significance level of regressors and the direction of their effects on dependent variable could be seen. As seen from Table 5.4, FDI inflows into Korea have affected its economy in a positive way but this effect is not significant at any levels. This positive effect of FDI on PCG is consistent with the claims of Borensztein et al. (1998), Dimelis (2005) and Duttaray et al. (2008). These studies claim that FDI makes positive contributions on the economy of the host country through positive spillover effect, providing capital and increasing the domestic saving and investment. However, Korea's the financial development level has a negative impact on its economy and this effect is significant at 10% significance level. As claimed in the literature, it is expected that financial development affects the performance of a country's economy in a positive way. Some countries, nonetheless, cannot benefit from the financial systems efficiently. One of the reasons behind this situation can be the business cycle effect resulting from globalization. With the spread of globalization, FDI has gained more importance. However, as the cross border capital flows increase into the countries, the countries are exposed to much more financial crises such as Asian Crisis occurred in 1997. As a result, countries have more severe stagnation periods in their

business cycles, and their financial systems have been affected from such periods negatively as well as their total output (Prasad et al., 2003). Al-Yousif (2002) also attributes this negative sign between financial development and economy to this business cycle effect rather than representation of long run relationship. Second reason for the negative relationship can be based on the fragile financial systems stemming from weak regulatory environment of financial intermediaries. The inefficient allocation of resources may lead to negative impacts on economic growth (Al-Yousif, 2002). Choong et al. (2004) has also found that the same negative relationship between economic growth and financial sector development in Korea by applying multivariate cointegration test. They have also supported the claims of Al-Yousif (2002) when explaining this negative relationship.

When it comes to the short run relationship of Model 1, it is expressed in Equation 5.2. as given below:

$$\Delta PCG_t = \alpha_0 + \alpha_1 ecm(-1) + \sum_{i=1}^{k} \alpha_{2i} \Delta PCG_{t-i} + \sum_{i=0}^{l} \alpha_{3i} \Delta FDI_{t-i} + \sum_{i=0}^{m} \alpha_{4i} \Delta DC_{t-i} + u_{12t} \tag{5.2}$$

ARDL (1, 0, 1) short run model has been constructed based on SBC. The details of short coefficients are given in Table 5.5:

Table 5.5 The estimated short run coefficients of ARDL (1, 0, 1) model of Korea (Dependent Variable: PCG)

Regressors	Coefficient	Standard Error	T-Ratio[Prob.]
ΔIntercept	27.8410	10.9196	2.5496[.016]**
ΔFDI	2.3640	1.3603	1.7378[.092]***
ΔDC	-80.2722	22.8208	-3.5175[.001]*
ecm(-1)	-.9807	.15392	-5.9654[.000]*

Note: *, **, *** denote the significance level at 1%, at 5%, at 10%, respectively.

As seen from the results in Table 5.5, the direction of each coefficient is similar to the results obtained in long run relationship model. However, in the short run, the effect of FDI on PCG has been found significant at 10% level and the effect of DC

on PCG has been found significant at 1% level. Besides these, the short run model gives the coefficient of the error correction term (*ecm(-1)*), which implies how quickly the cointegrated series come to the long run equilibrium after disturbances. It is expected that if the coefficient of *ecm(-1)* has a negative sign, then the variables come to the equilibrium in the long run after disturbances. Here, the coefficient of *ecm(-1)* is negative and statistically significant at 1% level, which points that the variables come to equilibrium in the long run.

When it comes to the long and short run dynamics of Model 2 for Korea, they have been constructed as follows. The long run relationship of the Model 2 is expressed in equation 5.3:

$$FDI_t = \delta_0 + \sum_{i=1}^{k} \delta_{1i} FDI_{t-i} + \sum_{i=0}^{l} \delta_{2i} PCG_{t-i} + \sum_{i=1}^{m} \delta_{3i} DC_{t-i} + u_{2t} \qquad (5.3)$$

The model of ARDL (3, 0, 0) has been selected according to SBC by the MICROFIT software. Here are the direction and significance level of long run dynamic coefficients in Table 5.6:

Table 5.6 The estimated long run coefficients of ARDL (3, 0, 0) model of Korea (Dependent Variable: FDI)

Regressors	Coefficient	Standard Error	T-Ratio[Prob.]
Intercept	-5.7927	.7450	-7.7751[.000]*
PCG	.0110	.0155	.7126[.482]
DC	2.8767	.3948	-7.2865[.000]*

Note: *, **, *** denote the significance level at 1%, at 5%, at 10%, respectively.

It is concluded that PCG has a positive impact on the attraction of FDI into Korea but the test result is statistically insignificant at any chosen levels. The positive relationship between economic growth and FDI is consistent with the claim of Zhang (2001). According to him, growing economy supported with better investments such as FDI leads to better opportunities and infrastructure, which increases the profit potential of foreign investors. When it comes to the DC, it

affects the FDI inflows of Korea in a positive way and it is found statistically significant at 1% level. The positive contribution of financial development level on FDI is supported by Hermes and Lensink (2003). According to them, financial services in the host country expand the borrowing opportunities of foreign investors. Moreover, Deichmann et al. (2003) have claimed that a well developed financial environment ease the transactions of foreigners in the host country.

In terms of short run relationship of Model 2, the short run model is constructed in Equation 5.4 as below:

$$\Delta FDI_t = \phi_0 + \phi_1 ecm(-1) + \sum_{i=1}^{k} \phi_2 \Delta FDI_{t-i} + \sum_{i=0}^{l} \phi_3 \Delta PCG_{t-i} + \sum_{i=0}^{m} \phi_4 \Delta DC_{t-i} + u_{22t} \tag{5.4}$$

ARDL (3, 0, 0) short run model has been constructed according to SBC. The details of short run coefficients are given in Table 5.7:

Table 5.7 The estimated short run coefficients of ARDL (3, 0, 0) model of Korea (Dependent Variable: FDI)

Regressors	Coefficient	Standard Error	T-Ratio[Prob.]
ΔIntercept	-6.3662	1.7186	-3.7042[.001]*
ΔPCG	.01214	.0167	.7242[.475]
ΔDC	3.1615	.8739	3.6178[.001]*
ecm(-1)	-1.0990	.2486	-4.4216[.000]*

Note: *, **, *** denote the significance level at 1%, at 5%, at 10%, respectively.

As noted in Table 5.7, all the direction and the significance level of short run coefficients are consistent with the long run model's coefficients. Additionally, the coefficient of *ecm(-1)* is also significant at 1% level and its sign is negative, which implies the disturbance among the variables has been removed and the variables come to equilibrium in the long run.

As a final step of ARDL procedure, it may be required to make diagnostic checking to check the validity of the selected ARDL (1, 0, 1) and ARDL (3, 0, 0) models for Model 1 and Model 2 respectively.

The test results of diagnostic checking of ARDL (1, 0, 1) model which implies the relationship between the regressors; FDI and financial development and the dependent variable; economic growth for Korea are given in Table 5.8:

Table 5.8 The diagnostic checking test results of ARDL (1, 0, 1) of Korea

Diagnostic Hypotheses	F-statistic[Prob.]
1. No serial correlation	3.3205[.079]
2. Linear functional form	1.0475[.315]
3. Homoscedasticity	.8832[.354]

The first hypothesis checks whether the residuals are serially correlated or not. Thus, the null hypothesis is set up as *there is no serial correlation among the residuals*, and tested by Lagrange multiplier test. The p-value of the first assumption is 0.079 is significant at only 10% significance level, which gives signals of serial correlation problem at 10% significance level. The second null hypothesis is constructed as *the model is in the linear form*, and it is tested by Ramsey's Reset test. The null hypothesis could not be rejected since p-value of 0.315 is insignificant at any levels up to 10%. This implies that there is no need to put additional variables into the model. The third assumption's null hypothesis is set up as *the variance of the residuals is homoscedastic*. When the p-value of this hypothesis is considered, it is seen that p-value is 0.354 which is greater than any alpha levels up to 10%; then, the null hypothesis could not be rejected at any significance levels. Thus, it is concluded that the variance of the residuals is homogenous. Additionally, it is good to check the stability of the model with the plots of CUSUM and CUSUMSQ tests. As seen from the Figure 5.3, the CUSUM statistics lie within the critical bounds at 5% significance level, which points that all the coefficients are stable over the time length for the chosen ARDL (1, 0, 1) model. It is also seen that in Figure 5.4, the CUSUMSQ statistics are also remain within the critical bounds at 5% significance level. Therefore, this model could be considered as robust for further estimations with no evidence of instability of the model.

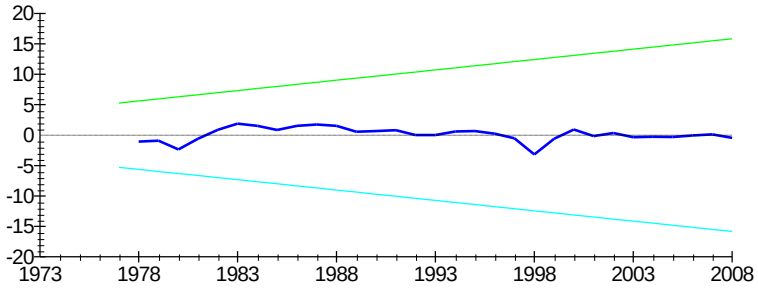

Figure 5.3 The plot of CUSUM of ARDL (1, 0, 1)
Note: The straight lines represent critical bounds at 5%significance level.

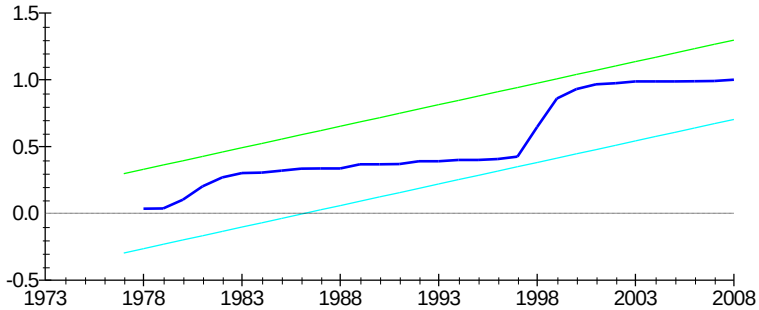

Figure 5.4 The plot of CUSUMSQ of ARDL (1, 0, 1)
Note: The straight lines represent critical bounds at 5%significance level.

The test results of diagnostic checking of ARDL (3, 0, 0) model which illustrates the relationship between the regressors; economic growth and financial development and the dependent variable; FDI are given Table 5.9:

Table 5.9 The diagnostic checking test results of ARDL (3,0,0) of Korea

Diagnostic Hypotheses	F-statistic[Prob.]
1. No serial correlation	4.9315[.035]
2. Linear functional form	.6335[.433]
3. Homoscedasticity	4.5313[.041]

The first hypothesis checks whether the residuals are serially correlated or not. Thus, the null hypothesis is that there is no serial correlation among the residual, and tested by Lagrange multiplier test of residual serial correlation. The p-value of this hypothesis has found significant at 5% level. This implies serial correlation among the residuals, when the alpha is considered bigger than 5%. The second null hypothesis is constructed as the model is in the linear form, and it is tested by Ramsey's Reset test. Since p-value of 0.433 is greater than any alpha values up to 10%, it can be concluded that the model is in the linear form. The null hypothesis of the third assumption is that the variance of the residuals is homoscedastic. When the p-value of this hypothesis is considered, it is seen that p-value is 0.041 and is significant at 5%. This implies that the problem of heteroscedastic variance may exist. To check the robustness of the ARDL model (3,0,0), it may be required to see CUSUM test plot in Figure 5.5. It is observed that CUSUM statistics generally lie within the critical value bands at 5% significance level, and some are on the upper limit, yet still in the bands, which says all the coefficients in the model are stable and the model is robust. However, in Figure 5.6, CUSUMSQ statistics have gone out from the critical bands, but they have come back to the within the critical bound lines and have stayed there.

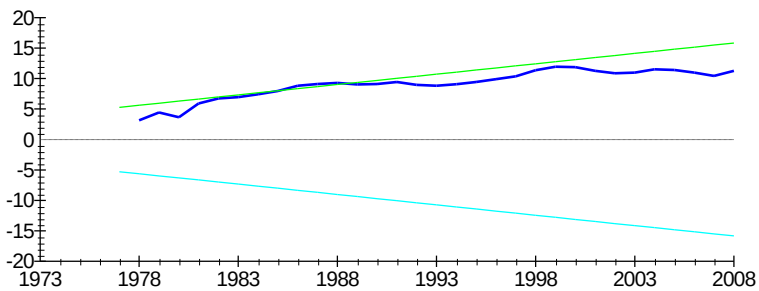

Figure 5.5 The plot of CUSUM of ARDL (3, 0, 0)
Note: The straight lines represent critical bounds at 5%significance level.

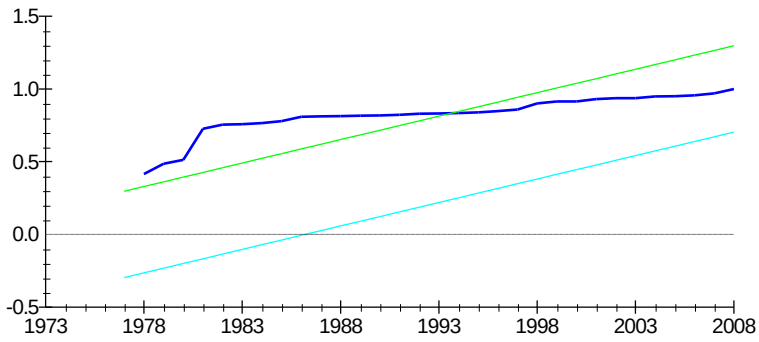

Figure 5.6 The plot of CUSUMSQ ARDL (3, 0, 0)
Note: The straight lines represent critical bounds at 5%significance level.

5.2 Malaysia

All ARDL procedures applied for Korea have also applied for Malaysia. Before starting the ARDL analysis, it is required to determine the integration order of each variable of Malaysia for the determination of critical values. ADF unit root test and NG-Perron unit root test are preferred due to the reasons implied before. The unit root test results are given in Table 5.10:

Table 5.10 The unit root test results of Malaysia

		ADF		NG-Perron	
Level		**T-statistic**	**Lag**	**MZa-statistic**	**Lag**
Intercept	PCG	-5.0839*	0	-17.9955*	0
	FDI	-3.3800**	0	-12.5905**	0
	DC	-2.3349	0	-0.6659	1
Intercept and trend	PCG	-5.1559*	0	-18.0942**	0
	FDI	-3.3315***	0	-13.4280	0
	DC	-0.9189	0	-2.4455	0

1st difference		**ADF**		**NG-Perron**	
		T-statistic	**Lag**	**MZa-statistic**	**Lag**
Intercept	PCG	-8.0409*	1	-15.6944*	0
	FDI	-8.2965*	0	-16.3566*	0
	DC	-5.3581*	0	-18.6161*	0
Intercept and trend	PCG	-7.9342*	1	-42.5071*	1
	FDI	-8.1887*	0	16.3395***	0
	DC	-5.8327*	1	-40.0774*	1

Note: *, **, *** denote the significance level at 1%, 5% and 10% respectively. T test statistics of ADF are compared with the critical t values given in the test result. MZa test statistics of NG-Perron are also compared with critical values given in the test results.

From the test results in the Table 5.10, the results of ADF unit root test and NG-Perron unit root tests are generally consistent with each other. Both tests have null hypotheses that the series has a unit root (i.e. the series are nonstationary). The null

hypotheses are significant at level for PCG, which implies PCG is *I(0)*. In addition to this, FDI is *I(0)* because the null hypotheses are rejected at level according to both unit root tests. On the contrary to these variables, DC is stationary at first order difference level (i.e. *I(1)*). As a conclusion since two types of integration order exist, both lower and upper critical values are needed to check the significance of F-statistics.

The first phase of applying ARDL method is testing the cointegration among the variables. The optimal VAR lag lengths of the models for Malaysia are determined as 1 with considering SBC. By selecting the optimal lag length, each model (i.e. Model 1, 2 and 3) is tested for cointegration analysis to detect the long run forcing variables it successively. The null hypotheses are given in Table 5.11. As in the first hypothesis, it is tested whether the FDI inflows and financial development level are long run forcing variables of the Malaysia's economic growth or not. Under the second hypothesis, it is checked that whether the economic growth and financial development level of Malaysia are long run forcing variables of the Malaysia's FDI inflows or not. Lastly, it is tested whether economic growth and FDI are long run forcing variables of financial development level in Malaysia or not as expressed in the third hypothesis. For each model, the null hypothesis has been constructed as *there exists no long run relationship among the variables*. The test results for cointegration are as follows:

Table 5.11 The null hypotheses for Malaysia

Cointegration Hypotheses	F-statistic
1. F(PCG| FDI, DC)	6.3996*
2. F(FDI| PCG, DC)	2.9691
3. F(DC| PCG, FDI)	2.8993

Note: *, **, *** denote the significance level at 1%, 5% and 10% respectively.

As seen from Table 5.11, the calculated F-statistic of Model 1 which is 6.3996 exceeds the upper limit of 1% significance level[1] and the null hypothesis of no

[1] The critical bound values in Table 5.3 are used. Both lower and upper values are considered since the variables are *I(0)* and *I(1)*..

cointegration is rejected at this level. This implies that the FDI inflows and financial development are long run forcing variables of economic growth in Malaysia. When the Model 2 has been considered, the F-statistic, 2.9691, is less than the lower limits of any significance levels. The null hypothesis of no cointegration could not be rejected, which means that economic growth and financial development level are not long run forcing variables of FDI in Malaysia. In addition to FDI, the calculated F-statistic of Model 3 is 2.8993 and it is less than lower limits of any significance levels. As a result of this, the null hypothesis of no cointegration cannot be rejected and it can be said that no cointegration has been found among the regressors; economic growth and FDI, and the dependent variable; financial development in Malaysia.

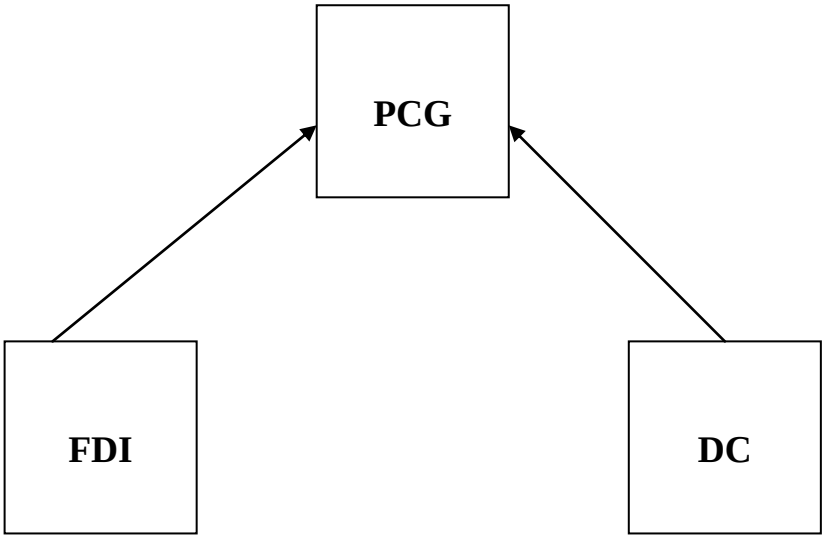

Figure 5.7 FDI and DC are long run forcing variables of PCG in Malaysia

As a second step of ARDL procedure, long run and short run relationships could be identified by ARDL method for only Model 1 according to the results of cointegration analysis (see in Figure 5.7). Nevertheless, there is no need to construct long run and short run relationship models for Model 2 and Model 3 since F-statistics of the models are less than the lower critical values of any significance levels, which implies that there are no cointegration among the variables of these models.

The long and short run dynamics of Model 1 for Malaysia have been illustrated in more details. The long run relationship of Model 1 is written in Equation 5.5:

$$PCG_t = \beta_0 + \sum_{i=1}^{k} \beta_{1i} PCG_{t-i} + \sum_{i=0}^{l} \beta_{2i} FDI_{t-i} + \sum_{i=0}^{m} \beta_{3i} DC_{t-i} + u_{1t} \quad (5.5)$$

To make a long run relationship analysis, SBC is considered for the determination of maximum lag values; k, l, m. As a consequence, ARDL (1, 0, 0) model is the selected by the MICROFIT 4.0 software. The details of long run coefficients are tabulated in Table 5.12:

Table 5.12 The estimated long run coefficients of ARDL (1, 0, 0) model of Malaysia (Dependent Variable: PCG)

Regressors	Coefficient	Standard Error	T-Ratio[Prob.]
Intercept	6.7410	5.0206	1.3427[.189]
FDI	6.7678	2.3179	2.9198[.006]*
DC	-3.3049	2.3947	-1.3801[.177]

Note: *, **, *** denote the significance level at 1%, at 5%, at 10%, respectively.

As seen from the Table 5.12, FDI inflows into Malaysia have affected its economy in a positive way and it is significant at 1% significance level. This result is consistent with the claims of Borenzstein et al.(1998), Dimelis(2005) and Duttaray et al. (2008), which assert that FDI promotes the host country's economic growth. On the other hand, DC has a negative impact on PCG and it is not statistically significant at any levels, which implies that financial development does not make positive contributions on the economy. This negative relationship could be explained by business cycle effect resulting from the crisis occurred in Malaysia and the weak regulatory environment of its financial system (Al-Yousif, 2002). Moreover, Choong et al. (2004) have also found that the same negative relationship between economic growth and financial sector development in Malaysia and have supported the claims of Al-Yousif (2002) in order to explain this negative relationship.

When it comes to the short run dynamics of Model 1, the short run relationship is expressed in Equation 5.6 as given:

$$\Delta PCG_t = \alpha_0 + \alpha_1 ecm(-1) + \sum_{i=1}^{k} \alpha_{2i} \Delta PCG_{t-i} + \sum_{i=0}^{l} \alpha_{3i} \Delta FDI_{t-i} + \sum_{i=0}^{m} \alpha_{4i} \Delta DC_{t-i} + u_{1t} \quad (5.6)$$

The short run model is determined as ARDL (1, 0, 0) according to SBC. The details of short run coefficients are given in Table 5.13:

Table 5.13 The estimated short run coefficients of ARDL (1, 0, 0) model of Malaysia (Dependent Variable: PCG)

Regressors	Coefficient	Standard Error	T-Ratio[Prob.]
ΔIntercept	7.0529	5.4330	1.2982[.204]
ΔFDI	7.0810	2.5119	2.8190[.008]*
ΔDC	-3.4578	2.5728	-1.3440[.189]
ecm(-1)	-1.0463	.16330	-6.4069[.000]*

Note: *, **, *** denote the significance level at 1%, at 5%, at 10%, respectively.

As seen from the Table 5.13, not only the direction but also the significance level of each regressor is similar to the results obtained in the long run relationship model. As expected, *ecm(-1)* has a negative sign and it is found statistically significant at 1% level, which indicates that the variables come to equilibrium in the long run.

As a final step of ARDL procedure, it may be needed to make diagnostic checking to see the validity of the selected ARDL (1, 0, 0) model for Model 1. The test results of diagnostic checking of ARDL (1, 0, 0) model which implies the relationship between the regressors; FDI and financial development and the dependent variable; economic growth for Malaysia are tabulated in Table 5.14:

Table 5.14 The diagnostic checking test results of ARDL (1,0,0) of Malaysia

Diagnostic Hypotheses	F-statistic[Prob.]
1. No serial correlation	1.0721[.309]
2. Linear functional form	.0491[.826]
3. Homoscedasticity	1.5234[.226]

The first hypothesis checks whether the residuals are serially correlated or not. This is tested by Lagrange multiplier test of residual serial correlation. It is obtained that the null hypothesis of no serial correlation is not significant since the p-value is 0.309 and is greater than any alpha values up to10%. The second null hypothesis is constructed as the model is in the linear form and it is tested by Ramsey's Reset test. The null hypothesis could not be rejected at any significance level since the p-value of 0.826 is greater than any alpha levels up to 10%. This implies that the model is in linear form. The null hypothesis of the third assumption is that the variance of the residuals is homoscedastic. When the p-value of this hypothesis is considered, it is 0.226 and greater than any alpha values up to 10%, which cannot reject null hypothesis of homoscedasticity. Thus, it is concluded that the variance of the residuals are homoscedastic. Additionally, CUSUM and CUSUMSQ test plots are considered to check the stability of the ARDL (1,0,0) model. As it is seen from Figure 5.8 and Figure 5.9, the model is robust and the long run and short run coefficients are stable since the CUSUM and CUSUMSQ statistics lie within their critical bound lines at 5 % significance level.

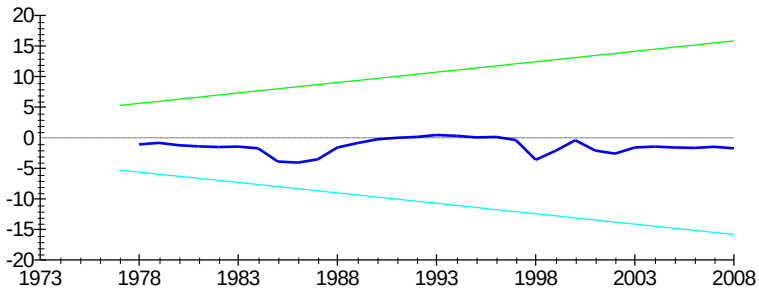

Figure 5.8 The plot of CUSUM of ARDL (1, 0, 0)
Note: The straight lines represent critical bounds at 5%significance level.

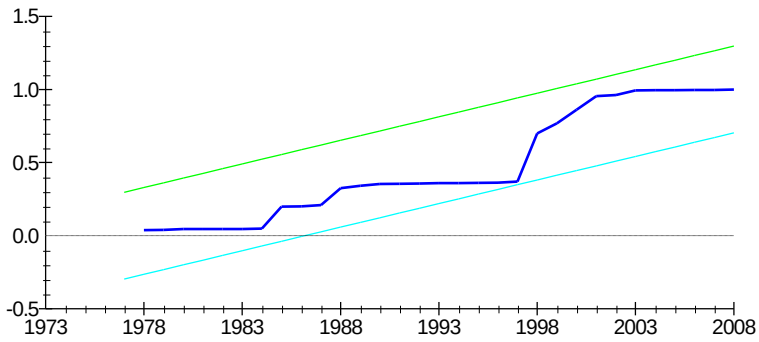

Figure 5.9 The plot of CUSUMSQ of ARDL (1, 0, 0)
Note: The straight lines represent critical bounds at 5%significance level.

5.3 The Philippines

All the procedures of ARDL method have been applied to the Philippines as applied for Korea and Malaysia. Before starting ARDL analysis, the integration order of each variable has been detected by ADF unit root test and NG-Perron unit root test. The unit root test results are given in Table 5.15:

Table 5.15 The unit root test results of the Philippines

		ADF		NG-Perron	
Level		**T-statistic**	**Lag**	**MZa-statistic**	**Lag**
Intercept	PCG	-3.1039**	0	-12.3685**	0
	FDI	-2.0716	1	-5.0700	1
	DC	-3.2100**	2	-42.6915*	2
Intercept and trend	PCG	-3.0752	0	-12.6207	0
	FDI	-4.8322*	3	-17.4661**	0
	DC	-3.1601	2	-55.1673*	2

1st difference		**ADF**		**NG-Perron**	
		T-statistic	**Lag**	**MZa-statistic**	**Lag**
Intercept	PCG	-5.8696*	1	-27.4592*	1
	FDI	-10.6220*	0	-13.1025**	0
	DC	-3.3269**	0	-13.2498**	0
Intercept and trend	PCG	-5.9043*	1	-32.2709*	1
	FDI	-10.4563*	0	-13.1085	0
	DC	-3.2930***	0	-13.5530	0

Note: *, **, *** denote the significance level at 1%, 5% and 10% respectively. T test statistics of ADF are compared with the critical t values given in the test result. MZa test statistics of NG-Perron are also compared with critical values given in the test results.

As noted in Table 5.15, PCG seems stationary (i.e.(*I(0)*) at level since the test result is significant at level with the intercept model according to both test results. Moreover, FDI is *I(0)* with intercept and trend model at level since it is found significant at this level. As for DC, test results say that DC is stationary (i.e.(*I(0)*) with the intercept model of ADF and NG-Perron at level. As aforementioned, if all

the variables are *I(0)*, the critical value is determined as the lower limit of each significance level to give decision about the existence of cointegration among variables for the Philippines.[2]

As a first step of ARDL method, the cointegration analysis has been done for detecting the long run relationships among the variables for Model 1, Model 2 and Model 3 separately. Before conducting cointegration analysis, the optimal VAR lag length of each model for the Philippines is determined as 1 with considering SBC, then the null hypotheses of the models are constructed as in Table 5.16. Under the first hypothesis, it is tested whether the FDI and financial development level are long run forcing variables of economic growth for the Philippines or not. The second hypothesis checks that whether the economic growth and financial development level are long run forcing variables of the FDI inflows into the Philippines or not. Under the third hypothesis, it is tested whether economic growth and FDI are long run forcing variables of financial development level or not. For each model, the null hypothesis has been constructed as *there exists no long run relationship among the variables*. The test results for cointegration are in Table 5.16 as follows:

Table 5.16 The null hypotheses for the Philippines

Cointegration Hypotheses	F-statistic
1. F(PCG| FDI, DC)	2.7065
2. F(FDI| PCG, DC)	1.8360
3. F(DC| PCG, FDI)	2.1730

Note: *, **, *** denote the significance level at 1%, 5% and 10% respectively.

The calculated F-statistic of Model 1, 2.7065 is not significant at any significance levels; thus, the null hypothesis of no integration among the variables is not rejected at any level[2]. More explicitly, FDI and financial development are not the long run forcing variables of economic growth of the Philippines. When it comes to the

[2] The lower limits of significance levels are considered as the critical values in Table 5.3 since all the variables are *I(0)*.

Model 2 and Model 3 since F-statistics of the models which are 1.8360 and 2.1730 respectively are less than the lower critical values of any significance levels, so the null hypotheses of no cointegration could not be rejected at any significance levels. Therefore, it is concluded that economic growth and financial development level are not long run forcing variables of FDI inflows into the Philippines. Additionally, economic growth and FDI are not long run forcing variables of financial development level for the Philippines.

Since no cointegration has been detected for each model of the Philippines, the long and short run model constructions are not necessary for this country.

5.4 Thailand

All ARDL procedures have been applied to Thailand as applied for the other countries in this study. Before starting ARDL analysis, the integration order of each variable has been detected by ADF unit root test and NG- Perron unit root test. The unit root test results are given in Table 5.17:

Table 5.17 The unit root test results of Thailand

		ADF		NG-Perron	
Level		**T-statistic**	**Lag**	**MZa-statistic**	**Lag**
Intercept	PCG	-3.6107**	0	-13.0495**	0
	FDI	-1.6407	0	-3.8593	0
	DC	-2.1684	1	-0.9847	1
Intercept and trend	PCG	-3.5515**	0	-14.0684	0
	FDI	-5.1044*	3	-12.5945	0
	DC	-1.7178	1	-7.6371	1

1st difference		**ADF**		**NG-Perron**	
		T-statistic	**Lag**	**MZa-statistic**	**Lag**
Intercept	PCG	-6.7532*	0	-13.0203**	0
	FDI	-4.9348*	4	-17.4298*	0
	DC	-3.1691**	0	-12.7502**	0
Intercept and trend	PCG	-6.6427*	0	-16.0005***	0
	FDI	-4.8239*	4	-17.5637***	0
	DC	-3.5529**	0	-13.7451	0

Note: *, **, *** denote the significance level at 1%, 5% and 10% respectively. T test statistics of ADF are compared with the critical t values given in the test result. MZa test statistics of NG-Perron are also compared with critical values given in the test results.

According to the results of ADF unit root test and NG-Perron unit root in Table 5.23, PCG seems stationary at level (i.e. *I(0)*) with the intercept models of ADF and NG-Perron tests. As for FDI, it also seems *I(0)* with the intercept and trend

model according to ADF. In terms of DC, both test results says that DC is nonstationary at level but it becomes stationary when it is differenced at first order (i.e. *I(1)*). There are two different orders of integration of the variables; thus, both lower limit and upper limit are considered to give decision about the existence of cointegration among variables for Thailand.

As a first step of ARDL method, the cointegration analysis has been done for detecting the long run relationships among the variables for Model 1, Model 2 and Model 3 separately. Before conducting cointegration analysis, the optimal VAR lag length of each model for Thailand is determined as 1 with considering SBC, then the null hypotheses of the models are constructed as in Table 5.18. Under the first hypothesis, it is tested whether the FDI and financial development level are long run forcing variables of economic growth for Thailand or not. The second hypothesis checks that whether the economic growth and financial development level are long run forcing variables of the FDI inflows into Thailand or not. Under the third hypothesis, it is tested whether economic growth and FDI are long run forcing variables of financial development level or not. For each model, the null hypothesis has been constructed as there *exists no long run relationship among the variables*. The test results for cointegration are in Table 5.18 as follows:

Table 5.18 The null hypotheses for Thailand

Cointegration Hypotheses	F-statistic
1. F(PCG| FDI, DC)	3.7794
2. F(FDI| PCG, DC)	.2988
3. F(DC| PCG, FDI)	.3965

Note: *, **, *** denote the significance level at 1%, 5% and 10% respectively.

The F-statistic of Model 1, 3.7794 is not significant at 1%, 5% levels[3]. Yet, the calculated F-statistic lies between lower and upper limits of 10% significance level, which points out that the inference from the test result is inconclusive. Hence, it cannot be exactly said that FDI and financial development level are the long run key

[3] The critical bound values in Table 5.3 are used. Both lower and upper values are considered since the variables are I(0) and I(1).

determinants of economic growth in Thailand. When Model 2 has been considered since the F-statistic, 0.2988, is less than the lowers limit of any significance levels, the null hypothesis of no cointegration cannot be rejected at any levels. Thus, it is concluded that there is no long run relationship among the variables of Model 2. When it comes to the Model 3 since the F-statistic of 0.3965 is below the lower limit of any significance levels, the null hypothesis of no cointegration among the variables cannot be rejected at any significance levels. Thus, it is concluded that economic growth and FDI are not long run forcing variables of financial development level for Thailand.

In conclusion for Thailand, since no cointegration has been detected for each model, there is no need to make further analysis in terms of long and short run model constructions for Thailand.

CHAPTER 6

CONCLUSION

In this study the cointegration relationship between economic growth, FDI and financial sector development have been investigated by ARDL method for Korea, Malaysia, the Philippines and Thailand for the time period of 1971-2008. Three cointegration models have been constructed for each country. The first model checks whether FDI and financial sector development are long run key determinants of economic growth or not. The second model tests whether long run economic growth and financial sector development are key determinants of FDI or not. Lastly, the third model checks whether economic growth and FDI are long run forcing variables of financial sector development or not. This study makes contribution to the literature since there has been no study investigates the cointegration relationships among these variables simultaneously and sets up direct linkages among them. Furthermore, applying ARDL method (Pesaran and Pesaran, 1997) is more contemporary econometric method for cointegration analysis when compared to other methods, and there is no study applied ARDL methodology to investigate the cointegration analysis among these three variables for these East Asian countries.

At the end of the study, it is detected that FDI and financial sector development could be long run forcing variables of economic growth as found in Korea and Malaysia. In more details, FDI could contribute to the economy of the host country in a positive way through different channels. Actually, sole FDI inflows may not be sufficient for economic growth. The host country should have some conditions such as having institutions favoring free investment policies, sufficient human capital, and well functioning legal systems. Thus, the policy makers of the country could apply appropriate strategies such as strengthening the necessary conditions to benefit from FDI positively and giving incentives to provide FDI entrance into the country. On the other hand, the effect of financial sector development on the economies of the countries is expected to be positive, but there can be weak

regulations and insufficient supervisory in the financial systems, which hinders the positive and efficient contributions of financial systems on the economic growth of countries as observed in Korea and Malaysia. Furthermore, with the spread of globalization, the increase in capital flows among the countries leads to more frequent and severe financial crises, which gives rise to longer stagnation periods in the business cycles of economies. Therefore, these negative turns of economic periods in the financial markets could be reflected in the relationship of financial sector development and economic growth, as noted in 1997 Asian Crisis in Korea and Malaysia. Therefore, the policy makers should make regulations and improvements to strengthen the efficiency of financial markets to acquire positive contributions of them to their economies. When it comes to the FDI as a dependent variable, it is found that economic growth and financial sector development could be long run key determinants of it as found in Korea. The market size with growing economy and financial sector development could be regarded important determinants of FDI by foreign investors, and these may contribute to the FDI inflows into the host country in a positive way. Therefore, a country with a growing economy could be perceived a promising market for foreign investors as observed in Korea. Moreover, it is wise for the country to develop and strengthen their domestic financial systems to offer better financial services for foreign investors to attract FDI inflows. Nonetheless, there is not sufficient evidence obtained in this study to support the idea that FDI and economic growth together could be long run forcing variables of the development of financial sectors in these countries.

REFERENCES

Agénor, P.R. (2003). Benefits and Costs of International: Theory and Facts. *World Economy 26 (8)*, 1089 – 1118.

Ahmed, S.M.& Ansari, M.I. (1998). Financial Sector Development and Economic Growth: The South - Asian Experience, *Journal of Asian Economics 9 (3)*, 503-517.

Aitken, B.J. & Harrison, A.E. (1999). Do domestic firms benefit from FDI?. *American Economic Review, 89 (3)*, 605-618.

Alfaro, L., Chanda, A., Kalemli – Ozcan, S. & Sayek, S. (2004). FDI and economic growth: the role of local financial markets. *Journal of International Economics 64*, 89- 112.

Al-Yousif, Y.K. (2002). Financial Development and Economic Growth: Another Look at the Evidence from Developing Countries, *Review of Financial Economic 11*, 131-150.

Ang, J.B. (2009). Foreign direct investment and its impact on the Thai economy: the role of financial development. *Journal of Economics and Finance, 33*, 316-323.

Arango, M.O.E. (2008). *The importance of FDI in the development of Emerging Countries: Application to Colombia and Philippines*. Retrieved June, 20, 2010 from the World Wide Web: http://www.paclas.org.ph/PAPERS/Arango.pdf

Arestis, P., Chortareas, G. & Desli, E. (2006). Financial Development and Productive Efficiency in OECD Countries: An Exploratory Analysis. *The Manchester School, 74 (4)*, 417 – 440.

Babic, A. & Stucka, T. (2001). Panel Analysis of FDI Determinants In European Transition Countries. *Economic Trends and Economic Policy, 11 (87)*, 31-60.

Bashier, A. & Bataineh, T. M. (2007). The Causal Relationship between Foreign Direct Investment and Savings in Jordan: an Error Correction Model. *International Management Review, 3(4)*, 12-18.

Bencivenga, V.R. & Smith, S. (1991). Financial Intermediate and Endogenous Growth. *Review of Economic Studies, 58 (2)*, 192-209.

Blanchard, O., (2006). *Macroeconomics*, Fourth Edition. Pearson Education, Inc. Upper Saddle River, New Jersey, 07458.

Borensztein, E., De Gregorio, J. & Lee, J-W. (1998). How does foreign direct investment affect economic growth?. *Journal of International Economics, 45*, 115-135.

Chakrabarti, A. (2001). The determinants of foreign direct investment: sensitivity analyses of cross country regressions. *Kyklos, 54*, 89-113.

Claessens, S., Klingebeil, D. & Schmukler, S.L. (2001). *FDI and Stock Market Development: Complements or Substitutes?*. World Bank Working Paper. Retrieved October, 20, 2010 from the World Wide Web: http://www.iadb.org/res/publications/pubfiles/pubs-fdi-4.pdf

Cho, H.J. (2003). Foreign Direct Investment: Determinants, Trends in Flows and Promotion Policies. *Investment Promotion and Enterprise Development Bulletin for Asia and the Pacific 1*, 99-112.

Choong, C.K., & Lim, K.P. (2009). Foreign direct investment, financial development and economic growth: the case of Malaysia. *Macroeconomics and Finance in Emerging Market Economies, 2(1)*, 13-30.

Choong, C.K., Yusop, Z. & Soo. S.C. (2004). Foreign Direct Investment, Economic Growth and Financial Sector Development: A Comparative Analysis. *ASEAN Economic Bulletin, 21 (3),* 279-289.

Choong, C.K., Yusop, Z.& Soo. S.C. (2005). Foreign Direct Investment and Economic Growth in Malaysia: The role of Domestic Financial Sector. *The Singapore Economic Review, 50(2),* 245-268.

Coppel, J. & Davies, M. (2003). *Foreign Participation in East Asia's Banking Sector*. International Department Reserve Bank of Australia. Retrieved October, 19, 2010, from the World Wide Web: http://www.bri.org/publ/cgfs22rba.pdf

De Mello, L.R. & Fukasaku K. (2000). Trade and FDI in Latin America and Southeast Asia: temporal causality analysis. *Journal of International Development, 7,* 903-924.

Deichmann, J. Karidis, S. & Sayek, S. (2003). Foreign Direct Investment in Turkey: Regional Determinants. *Applied Economics 35,* 1767-1778.

Dickey, D.A. & Fuller, W.A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Econometrica, 64,* 813-836.

Dimelis, S.P. (2005). Spillover from foreign direct investment and firm growth: Technological, financial and market structure effects. *International Journal of Economics of Business, 12 (1),* 85-104.

Dondeti, V.R., Mohanty, B.B. & Turner, C.G. (2008). A Panel Data Analysis of the Asian Financial Crisis on the Relationship between Foreign Direct Investment and Trade Balance. *Journal of International Finance and Economics 8(3),* 19-29.

Dunning, J.H. (1977). *Trade, Location of Economic Activity and the Multinational Enterprise: A Search for an Eclectic Approach*. in Ohlin B, Hesselborn P O and

Wijkman P M (Eds). The International Allocation of Economic Activity. Macmillan, London.

Durham, J.B. (2004). Absorptive Capacity and the Effects of foreign direct investment and equity and portfolio investment on economic growth. *European Economic Review 48*, 285-306.

Duttaray, M., Dutt, A. & Mukhopadhy, K. (2008) Foreign Direct Investment and economic growth in less developed countries: an empirical study of causality and mechanism. *Applied Economics, 40*, 1927-1939.

Elboiashi, H., Noorbakhsh, F., Paloni, A. & Azemar, C. (2009). The causal relationship between foreign direct investment, domestic investment and economic growth in North African non-oil producing countries: Empirical evidence from cointegration analysis. *Advances in Management, 2 (11),* 19-25.

Engle, R. & Granger, C. (1987). Co-integration and error correction: representation, estimation and testing. *Econometrica 55*, 251 – 276.

Eun, C.S. & Resnick, B.G. (2007). *International Financial Management*, Fourth Edition. McGraw-Hill, New York.

Faras, R.Y & Ghali, K.H. (2009). Foreign Direct Investment and Economic Growth: The case of the GCC Countries. *International Research Journal of Finance and Economics, 29,* 1450 – 2887.

Feenstra, R.C. &. Hanson, G. H (1997). Foreign direct investment and relative wages: Evidence from Mexico's maquiladoras. *Journal of International Economics 42*, 371-393.

Fortanier, F. (2007) Foreign direct investment and host country economic growth: Does investor's country of origin play a role?. *Transnational Corporations 16 (2),* 41-76.

Fry, M.J. (1978). Money and capital or financial deepening in economic development. *Journal of Money, Credit Banking 10 (4),* 464-475.

Ghatak, S. & Siddiki, J. (2001). The use of ARDL approach in estimating virtual exchange rates in India. *Journal of Applied Statistics, 28,* 573-583.

Greenwood, J. & Jovanovic, B. (1990). Financial Development, Growth and the Distribution of Income. *Journal of Pacific Economy, 98,* 1067-107.

Goldsmith, R.W. (1969) *Financial Structure and Development*. New Haven, CT: Yale University Press.

Gupta, K.L. (1987). Aggregate Savings, Financial Intermediation and Interest Rate. *Review of Economics and Statistics 69 (2),* 303-311.

Habibullah, M.Z. & Eng, Y.K. (2006). Does financial development cause economic growth? A panel data dynamic analysis for Asian developing countries. *Journal of the Asian Pacific Economy, 11 (4),* 377-393.

Hailu, Z.A. (2010). Demand Side Factors Affecting the Inflow of Foreign Direct Investment to African Countries: Does Capital Market Matter?. *International Journal of Business and Management 5(5),* 104-116.

Harrison, A. & McMillan, M. (2003). Does direct foreign investment affect domestic firm credit constraints?. *Journal of International Economics 61,* 73 -100.

Harrison, A., McMillan, M. & Love I. (2004). Global capital flows and financing constraints, *Journal of Development Economics 75,* 269-301.

Héricourt, J. & Poncet, S. (2009). FDI and Credit Constraints: Firm Level Evidence in China. *Economic Systems*, 33, 1-21

Hermes, N. & Lensink, R. (2003). Foreign direct investment, financial development and economic growth. *Journal of Development studies 40*: 142-163.

Hoang, P.T. (2009). *Assessment of FDI Spillover Effects for the Case of Vietnam: A survey of Micro-data Analysis*. Deepening East Asia Economic Integration. ERIA Research Project Report 2008-1.

Huang, H. & Xu, C. (1999). Institutions, Innovations and Growth. *American Economic Review*, 89 (2), 438-443.

International Monetary Fund. (1993). *Balance of Payments Manuel, Fifth Edition*. Retrieved July, 25, 2010 from the World Wide Web: http://www.imf.org/external/np/sta/bop/bopman.pdf

Jalil, A. & Ma, Y. (2008). Financial Development and Economic Growth: Time Series Evidence From Pakistan and China. *Journal of Economic Cooperation, 29(2)*, 29-68.

Javorcik, B.S. (2004). Does foreign direct investment increase the productivity of domestic firms? In search of spillovers through backward linkages. *American Review 94 (3)*, 605-627.

Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control 12*, 231-254.

Johansen, S. (1991). Estimation and hypothesis testing of cointegration vectors in Gaussian vector autoregressive models. *Econometrica 59*, 1551-1580.

Johansen, S. & Juselis, K. (1990). Maximum likelihood estimation and inference on cointegration: with application to the demand for money. *Oxford Bulletin of Economics and Statistics 52*, 169-210.

Kemal A.R., Qayyum, A. & Hanif, M.N. (2007). Financial Development and Economic Growth: Evidence from a Heterogeneous Panel of High Income Countries. *The Lahore Journal of Economics, 12(1)*, 1-34.

King, R.G. & Levine, R. (1993). Finance and Growth: Schumpeter might be right. *Quarterly Journal of Economics 108*, 717-738.

Lall, S. (2000). *FDI and development: research issues in emerging context*. Policy Discussion Paper 20, Centre for International Economic Studies, University of Adelaide.

Levich, R.M. (1987). *Financial Innovations in International Financial Markets*. National Bureau of Economic Research Working Paper, 2277.

Levine, R. (1996). *Foreign Banks, Financial Development, and Economic Growth*. In C.E.Barfield (ed), International Financial Markets (American Institute Press, Washington, DC).

Levine, R. (1997). Financial development and economic growth: views and agenda. *Journal of Economic Literature 35*, 688-726.

Levine, R., Loayza, N. & Beck, T. (2000). Financial Intermediation and Growth: Causality and Causes. *Journal of Monetary Economics 32*, 31-77.

Mah, J.S. (2000). An empirical examination of the disaggregate import demand of Korea: the case of information technology products. *Journal of Asian Economics, 11*: 237-244.

McKinnon, R.I., (1973). *Money and Capital in Economic Development*. Washington DC: Brooking Institution.

Moltke K. (2004). *A Model International Investment Agreement for the Promotion of Sustainable Development*. International Institute for Sustainable Development, Canada.

Ng, S. and Perron, P. (2001). Lag length selection and the construction of unit root tests with good size and power. *Econometrica, 69*: 1519-1554.

Odhiambo, N.M. (2007). Supply Leading versus Demand Following Hypothesis: Empirical Evidence from Three SSA Countries. *African Development Review, 19 (2)*, 257-280.

Organization for Economic Cooperation and Development. (2002). *Foreign Direct Investment for Development: Maximizing Benefits, Minimizing Costs*. OECD Publication Service, France.

Organization for Economic Cooperation and Development. (2008). *OECD Benchmark Definition of Foreign Direct Investment*, Fourth Edition. France.

Omran, M. & Bolbol, A. (2003). Foreign direct investment, financial development and economic growth: evidence from the Arab countries. *Review of Middle East Economics and Finance, 1 (3)*, 231-249.

Patrick, H.T. (1966). Financial Development and Economic Growth in Underdeveloped Countries. *Economic Development and Cultural Change, 14 (2)*, 174-189.

Pattichis, C.A. (1999). Price and Income Elasticity of Disaggregated Import Demand: Results from UECMs and an Application. *Applied Economics, 31*, 1061-1071.

Peker, O. & Gocer, I. (2010). Yabancı Doğrudan Yatırımların Türkiye'deki İşsizliğe Etkisi: Sınır Testi Yaklaşımı. *Ege Academic Review, 10(4)*, 1197-1194.

Pesaran, M.H. & Pesaran, B. (1997). Working with Microfit 4.0: Interactive Econometric Analysis. Oxford University Press.

Pesaran, M.H. & Pesaran, B. (1997). *Working with Microfit 4.0*. Camfit Data Ltd, Cambridge.

Pesaran, M.H. & Shin, Y. (1995). *Autoregressive Distributed Lag Modeling Approach to Cointegration Analysis*. DAE Working paper, NO.9514, *Department of Applied Economics*, University of Cambridge.

Pesaran, M.H., Shin, Y. & Smith, R. (2001). Bound Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics, 16*, 289-326.

Phillips, P.C.B. & Perron, P. (1988). Testing for a unit root in time series regressions. *Biometrica, 75*: 335 – 346.

Prasad, E., Rogoff, K., Wei, S.J. & Kose, M.A.. (2003). *Effects of Financial Globalization on Developing Countries: Some empirical evidence*. International Monetary Fund, Occasional Paper 220, Washington DC, 2003.

Root, F.R. & Ahmed, A.(1979). Empirical Determinants of Manufacturing Direct Foreign Investment in Developing Countries. *Economic Development and Cultural Change, 27 (4)*, 751-767.

Sari, R., Ewing, B.T. & Soytas, U. (2008). The relationship between disaggregate energy consumption and industrial production in the United States: An ARDL approach. *Energy Economics, 30*, 2302-2313.

Schmukler, S. L. (2004). Financial Globalization: Gain and Pain for Developing Countries. *Federal Reserve Bank of Atlanta Economic Review, Second Quarter*, 38-66.

Shan, J.Z., Morris, A.G. & Sun, F. (2001). Financial Development and Economic Growth: An Egg-and-Chicken Problem?. *Review of International Economics, 9 (3)*, 443 -454.

Shaw, E. (1973). *Financial Deepening in Economic Development*. Oxford University Press.

United Nations, Caribbean Development and Cooperation Committee. (1999). *Globalization of Financial Markets: Implications for the Caribbean*. Subregional Headquarters for the Caribbean, Economic Commission for Latin America and the Caribbean, LC/CAR/G.562

United Nations Conference on Trade and Development. (2009). *World Investment Report: Transnational Corporations, Agricultural Production and Development*. Part 1, New York and Genava.

United Nations Conference on Trade and Development (2010). *Foreign Direct Investment Flows*. Retrieved September, 15, 2010 from the World Wide Web: http://unctadstat.unctad.org/TableViewer/tableView.aspx

Wang, C. & Yu, L. (2007). Do spillover benefits grow with rising foreign direct investment? An empirical examination of the case of China. *Applied Economics 39 (3)*, 397-405.

Wongbangpo, P. & Sharma, S.C. (2002). Stock Market and macroeconomic fundamental dynamic interactions: ASEAN-5 countries. *Journal of Asian Economics 13*, 27-51.

World dataBank Online Database: World Development Indicators. (2010). Retrieved September, 5, 2010 from the World Wide Web: http://data.worldbank.org/data-catalog/world-development-indicators

Zakaria. Z. (2007). The causality relationship between financial development and foreign direct investment. *Jurnal Kemanusian 10*, 1-23.

Zhang, K. H. (2001). Does foreign direct investment promote economic growth? Evidence from East Asia and Latin America. *Contemporary Economic Policy, 19 (2)*, 175-185.

Zhou, D., Li, S. & Tse, D.K. (2002). The impact of FDI on the productivity of domestic firms: the case of China. *International Business Review, 11*, 465-484.

APPENDICES

Appendix A: Autoregressive Distributed Lag Models

The selection of ARDL (d, p_1, p_2, $p_{3,\ldots,}$ p_k) model and the determination of coefficients are based on the theoretical frame of Pesaran and Pesaran (1997, p. 397-399) and given below in Equation 1:

$$\Phi(L,d)y_t = \sum_{i=1}^{k} \alpha_i(L,p_i)x_{it} + \delta' w_t + u_t \tag{1}$$

where

$$\Phi(L,d) = 1 - \Phi_1 L - \Phi_2 L^2 - \ldots\ldots - \Phi_d L^d \tag{2}$$

$$\alpha_i(L,p_i) = \alpha_{i0} + \alpha_{i1}L + \alpha_{i2}L^2 + \ldots\ldots\ldots\ldots + \alpha_{ipi}L^{pi} \tag{3}$$

where $i=1,2,\ldots,k$ is the number of independent variables. $d=0,1,2,\ldots\ldots,m$ is the order of dependent variable and while $p_i = 0,1,2,\ldots,m$ is the order of *ith* regressor. m is the chosen maximum lag length, and $\Phi(L,d)$ and $\alpha_i(L,p_i)$ represents the polynomial lag operators of the dependent variable and the regressors with maximum order of d and p_i, respectively. y_t denotes the dependent variable and x_{it} is the *ith* regressor. L represents the lag operator, and w_t is an $n\times 1$ vector of deterministic variables like time trend, constant term and dummies.

The option of ARDL in Microfit 4.0 estimates the $(m+1)^k$ different ARDL models under any chosen model selection criteria such as Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SBC) or Hannan Quinn Criterion (HQC). Then the optimal ARDL model with the most appropriate lags is given according to the chosen model selection criteria by the software. The long run coefficients of

regressors of dependent variable are computed under the selected ARDL model as in Equation 4:

$$\beta_i = \frac{\hat{\alpha}_i(l,\hat{p}_i)}{\hat{\Phi}(l,\hat{d})} = \frac{\hat{\alpha}_{i0} + \hat{\alpha}_{i1} + ...\hat{\alpha}_{i\hat{p}i}}{1 - \hat{\Phi}_1 - \hat{\Phi}_2 - .....\hat{\Phi}_{\hat{d}}} \tag{4}$$

i=1,2,…..,k.

here the $\hat{p}_i$'s are the selected lag values of *p* and $\hat{d}$ is the selected lag value of *d*. The error correction model of ARDL ($\hat{d}$, $\hat{p}_1$, $\hat{p}_2$,……, $\hat{p}_k$) is expressed as in Equation 5:

$$\Delta y_t = -\Phi(1,\hat{d})EC_{t-1} + \sum_{i=1}^{k}\alpha_{i0}\Delta x_{it} + \delta'\Delta w_t - \sum_{j=1}^{\hat{d}-1}\Phi_j^*\Delta y_{t-j} - \sum_{i=1}^{k}\sum_{j=1}^{\hat{p}_i-1}\alpha_{ij}^*\Delta x_{i,t-j} + u_t \tag{5}$$

here the EC is expressed as in Equation 6:

$$EC_t = y_t - \sum_{i=1}^{k}\hat{\beta}_i x_{it} - \hat{\varphi}' w_t \tag{6}$$

where $\Phi(l,\hat{d}) = 1 - \hat{\Phi}_1 - \hat{\Phi}_2 - ..... - \hat{\Phi}_{\hat{d}}$ which gives the coefficient of error correction term. $\hat{\varphi}$ is the long run coefficients of deterministic variables. $\hat{\Phi}_j^*$ and $\hat{\alpha}_{ij}^*$ are the short run coefficients.

Appendix B: Time Series Plots of Variables

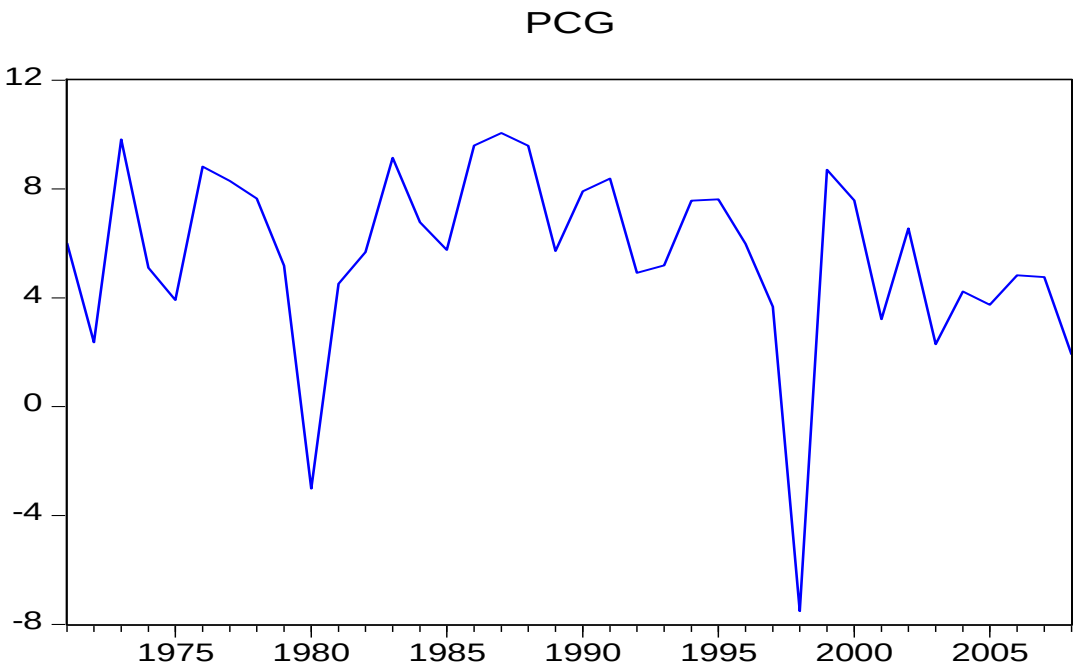

Figure B1. Time series plot of annual growth rate of output per capita (%) in Korea

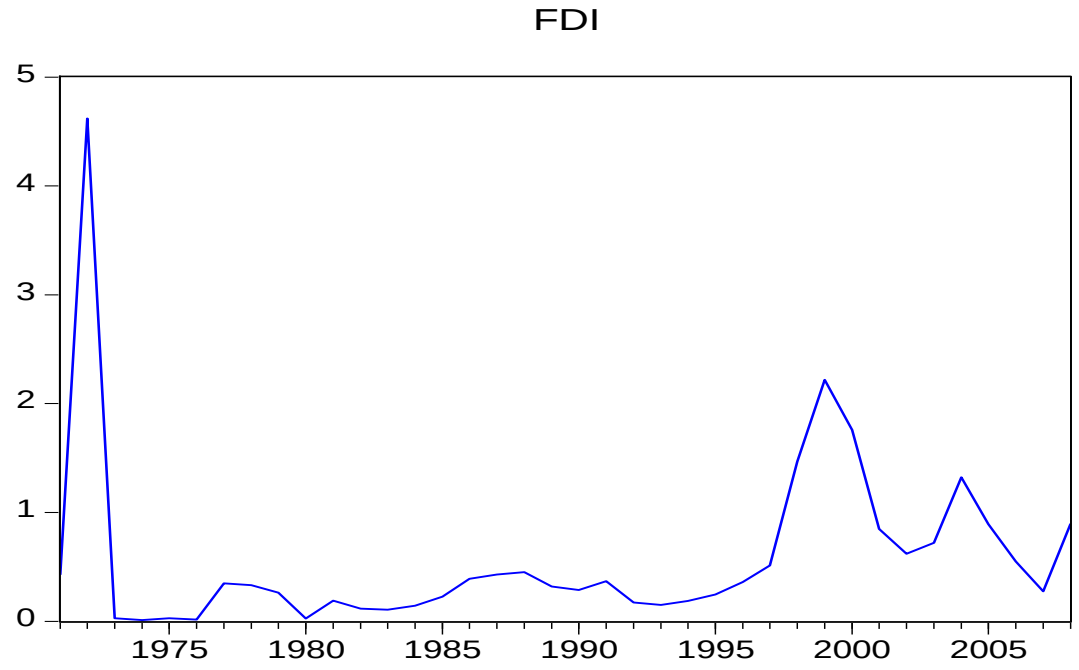

Figure B2. Time series plot of annual FDI inflow (GDP %) in Korea

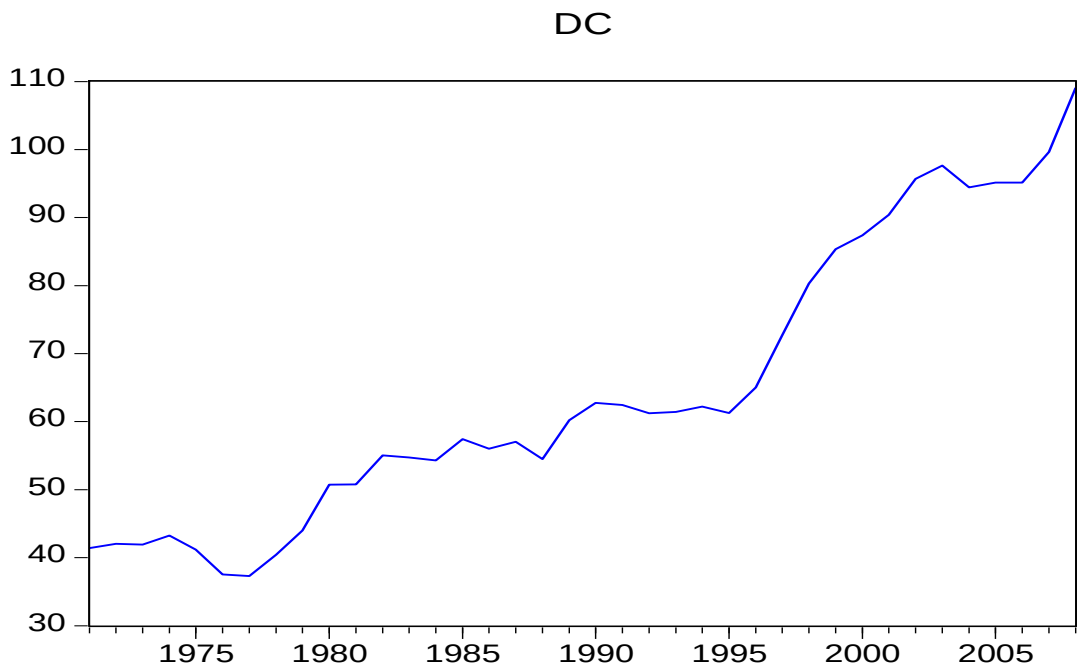

Figure B3. Time series plot of domestic credit to private sector (GDP %) in Korea

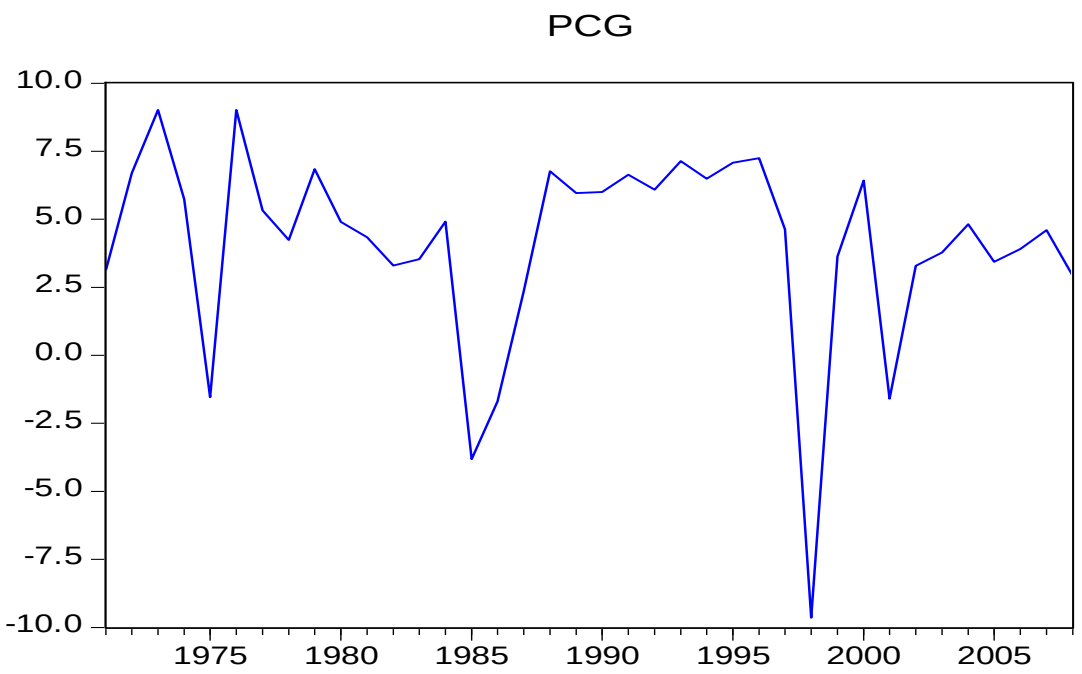

Figure B4. Time series plot of annual growth rate of output per capita (%) in Malaysia

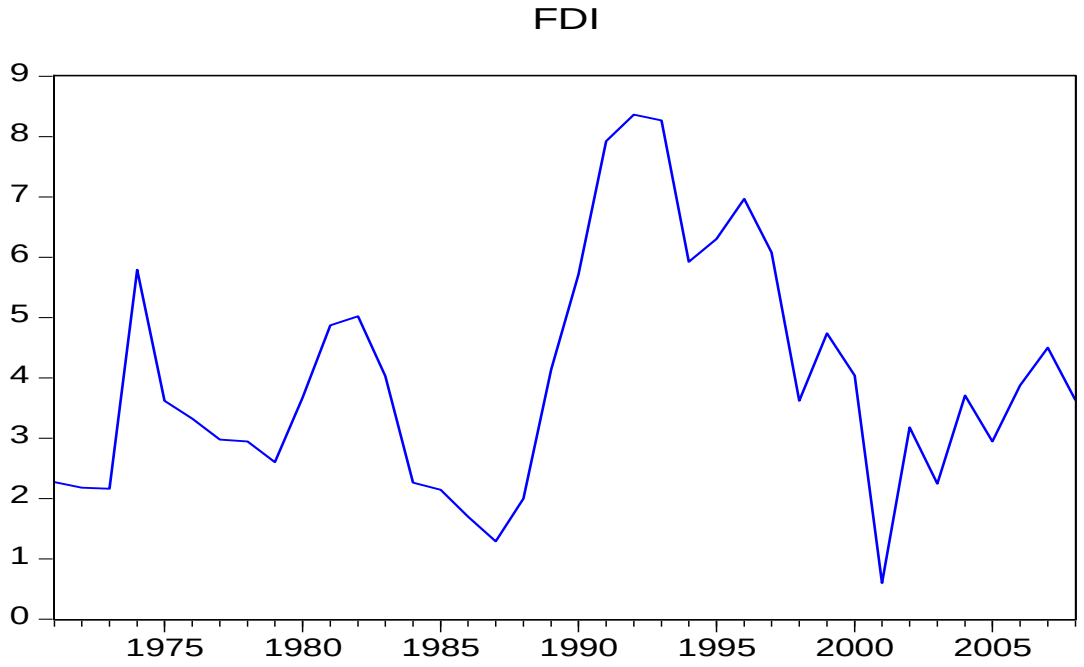

Figure B5. Time series plot of annual FDI inflow (GDP %) in Malaysia

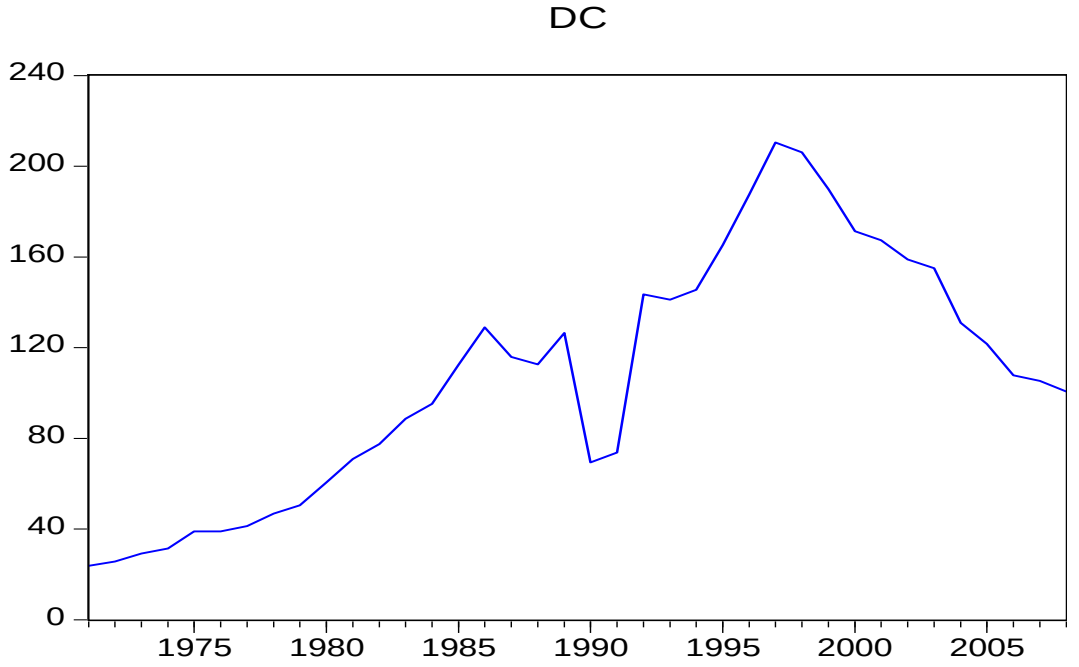

Figure B6. Time series plot of domestic credit to private sector (GDP %) in Malaysia

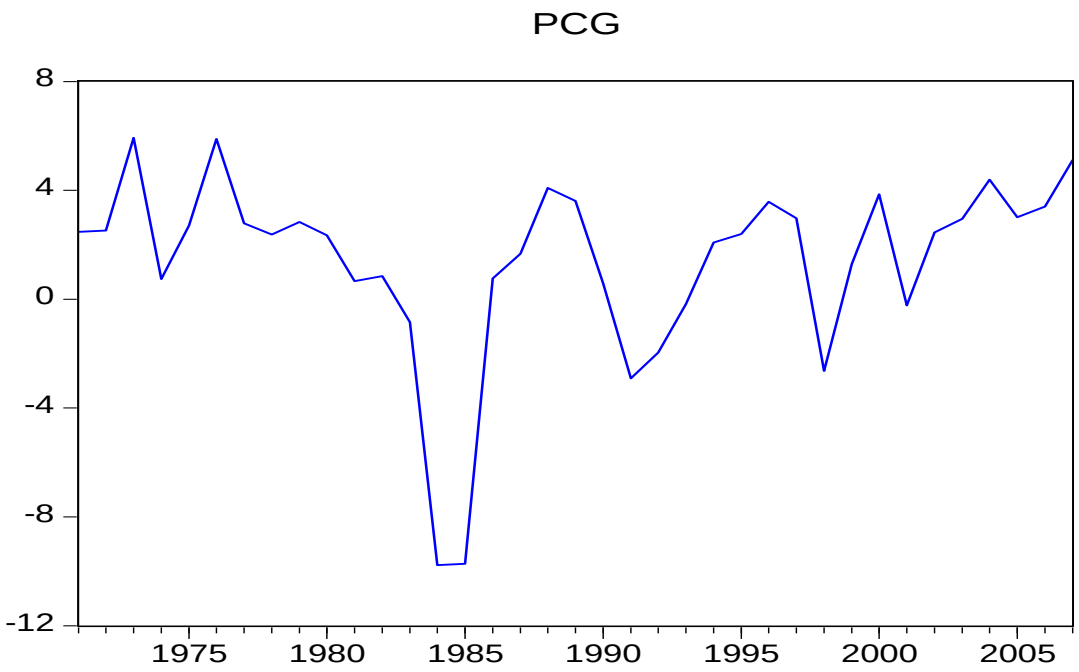

Figure B7. Time series plot of annual growth rate of output per capita (%) in the Philippines

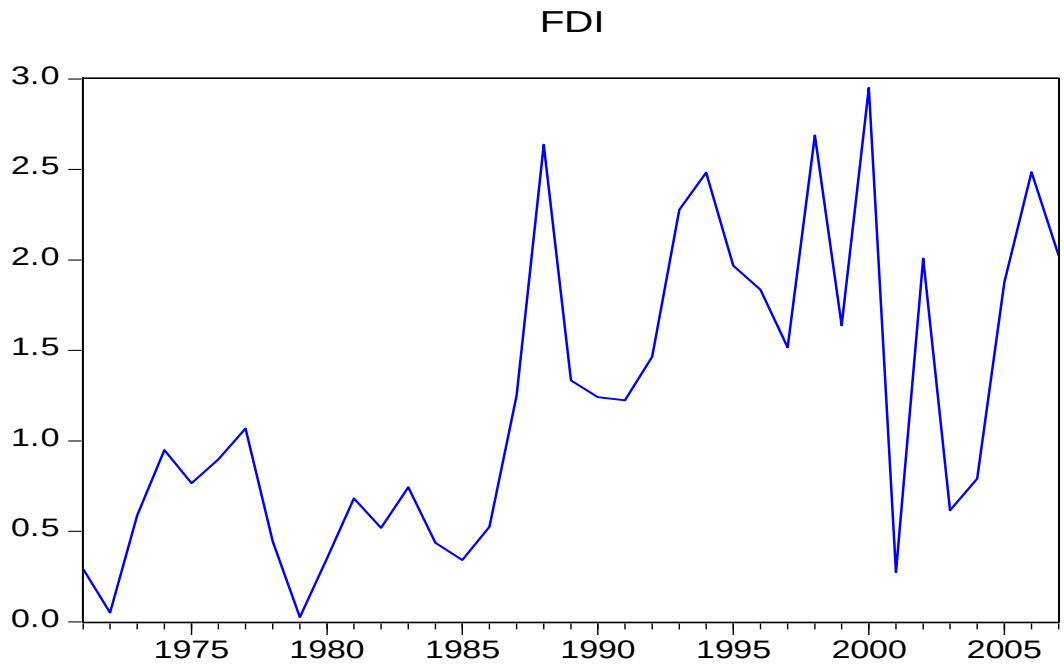

Figure B8. Time series plot of annual FDI inflow (GDP %) in the Philippines

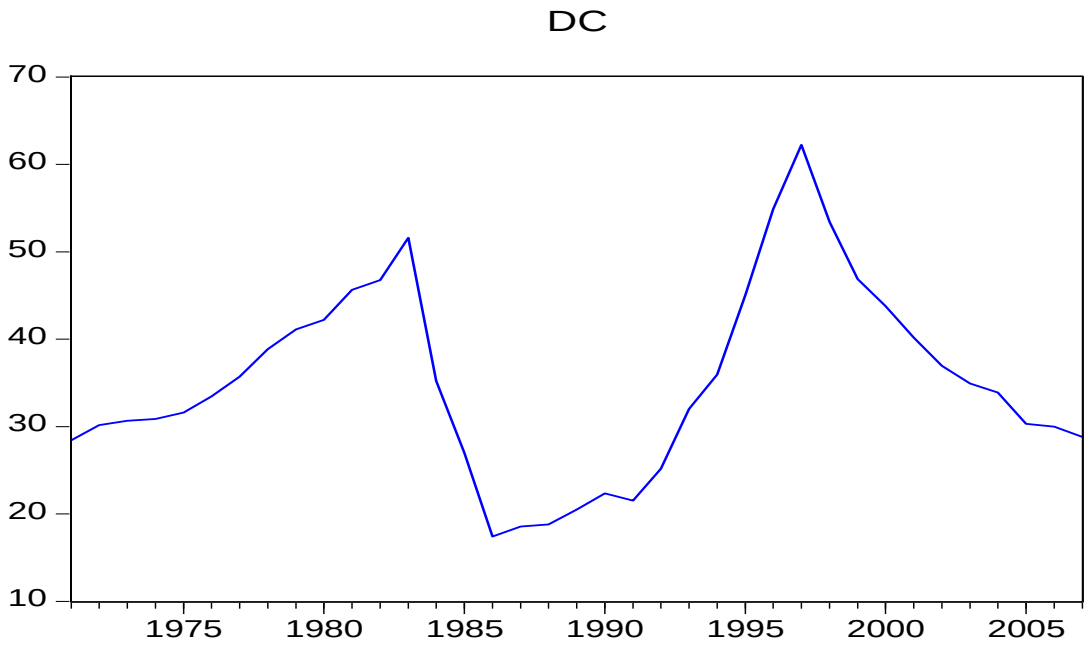

Figure B9. Time series plot of domestic credit to private sector (GDP %) in the Philippines

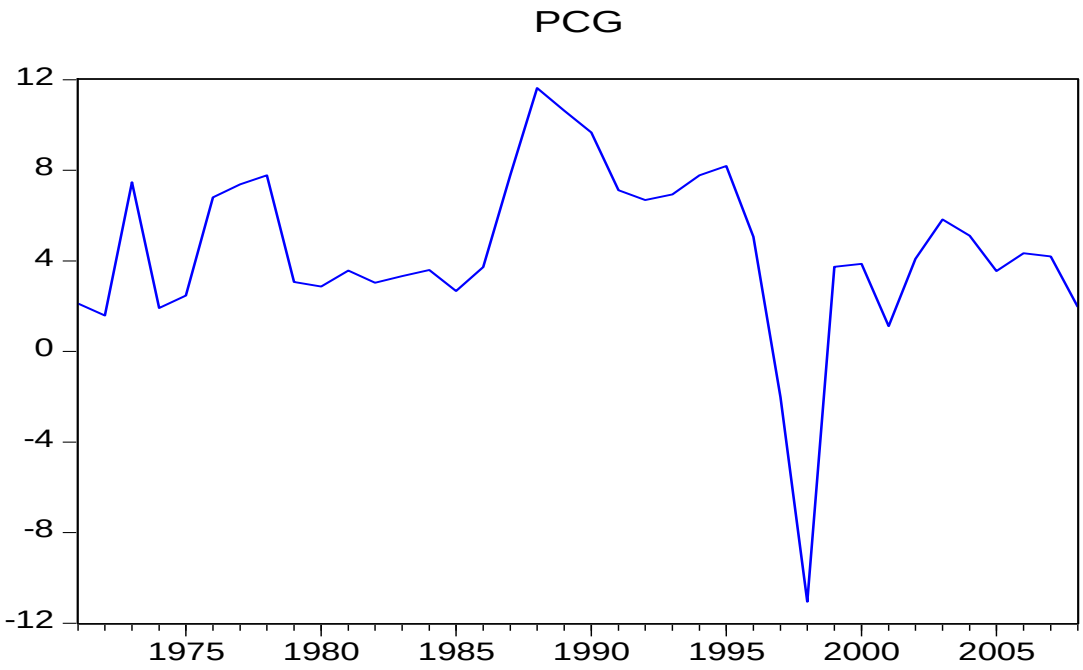

Figure B10. Time series plot of annual growth rate of output per capita (%) in Thailand

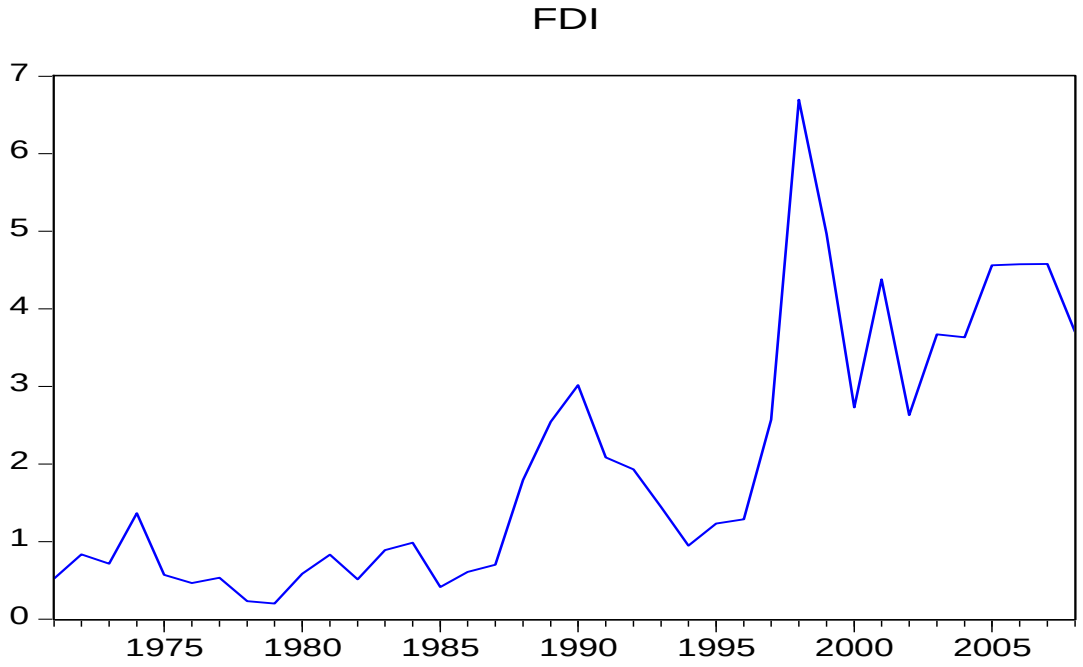

Figure B11. Time series plot of annual FDI inflow (GDP %) in Thailand

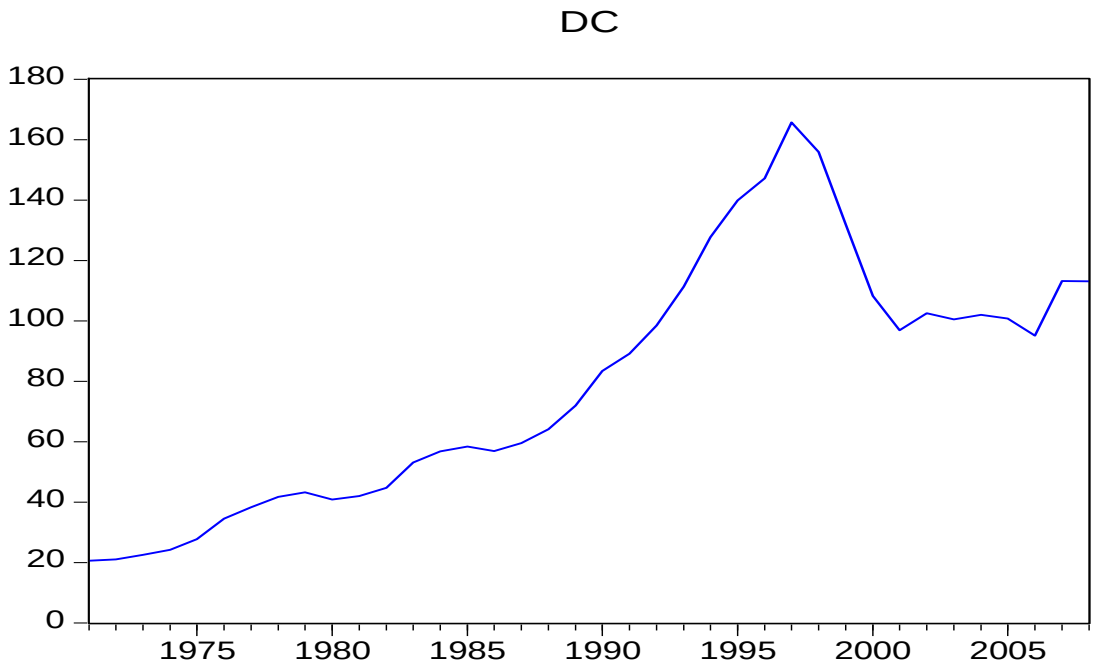

Figure B12. Time series plot of domestic credit to private sector (GDP %) in Thailand