FOREIGN DIRECT INVESTMENT, FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH IN ASIAN DEVELOPING COUNTRIES

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ABSTRACT

This research investigates the role of domestic financial development in enhancing the positive effects of foreign direct investment (hereafter, FDI) on economic growth in Asian developing countries. In other words, we examine whether countries with a better domestic financial system can utilize FDI more efficiently. The empirical analysis uses balanced panel data of 24 Asian developing countries in the period 1995-2009. This research applies the various models and techniques in panel data regression. Linear static models for panel data, including constant coefficients model or pooled regression model (POOLED), fixed effects regression model (FEM) and random effects regression model (REM) are employed. We analyze all models and employ several kinds of test including poolability test, Hausman test, LM test, fixed effects tests and Wald tests to select the most appropriated estimated model. The research findings show that FDI alone does not have direct effect on economic growth but does have when combined with financial development. Well-developed domestic financial markets promote the process of technological diffusion associated with FDI in Asian developing countries. Therefore, FDI and domestic financial development are complementary in increasing the rate of economic growth in the region. There is a threshold level of domestic financial development above which FDI starts to have positive impacts on economic growth.

Keywords: Foreign Direct Investment, Financial Development, Economic Growth, Panel Data, Asia Developing Countries.

1. INTRODUCTION

Over the past decades, many developing countries want to attract more FDI because of the belief that FDI can have a positive impact on economic growth through the transfer of technology, productivity gains, the introduction of new processes to the domestic market, the employee training, managerial skills and international production networks. Such positive impact does not occur automatically, but rather, depends on the absorptive power of receipt country. For a long time, the importance of absorptive power focuses only on human capital and trade regime. In recent years, the level of financial development has emerged as an important channel via which FDI enhances growth. In fact, a higher level of financial development allows the host country to exploit FDI more efficiently through many ways. First, the providing of more credit facilities allows firms to purchase new machines, upgrade existing or adopt new technologies and upgrade the skills of managers and labors. Second, the

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presence of an efficient financial system facilitates FDI to create backward linkages, which improve production efficiency and then benefit the local suppliers. Therefore, financial development plays a crucial role in allowing host country to absorb the spillovers associated with FDI. In addition, global FDI inflows have declined due to global financial crisis since 2008. It forces developing countries to have more competitive advantages to attract FDI. Besides traditional channels such as favorable polices, infrastructure, lower labor cost …, better financial development can be a new channel to attract more FDI.

Many recent studies have shown that the positive impact of FDI is dependent on the extent of financial sector development in host countries. However, most of these studies provide international evidence (Hermes and Lensink, 2003; Alfaro et al., 2004; Lee and Chang, 2009; Chee and Nair, 2010). The Asian region has been the most attractive destination for foreign direct investment in the world. Thus, understanding how to utilize FDI efficiently in this region is very important. However, there are still few studies examining the role of financial development in enhancing the contributions of FDI on economic growth in Asian developing countries. The paper attempts to fill this gap in the literature.

The rest of the paper is organized as follows: section 2 presents literature review, section 3 describes model, data and methodology, section 4 discusses empirical results and section 5 provides a summary and conclusions.

2. LITERATURE REVIEW

2.1. The impact of FDI on economic growth

Theoretically, the neo-classical and the endogenous growth models have the different viewpoints about the relationship between FDI and economic growth in a recipient country. According to the neo-classical models, FDI can only affect growth in the short run because of diminishing returns to physical capital (Barro and Sala-I-Martin, 1995; De Mello, 1997).

In contrast, recent endogenous growth models imply that FDI can affect growth endogenously in the long run if it generates increasing returns in production via externalities and productivity spillovers (Barro, 1991; Barro and Sala-I-Martin, 1995; De Mello, 1997). In these models, FDI was thought to be an important source of capital accumulation and technology change. In particular, FDI affects the growth rate via research and development investment (R&D) and human capital variables. The benefits of FDI inflows are not only technology transfer but also crucial knowledge transfer in terms of training, skill acquisition, new management practices, and organizational arrangements. This is well-known that FDI generates positive spillovers for the local economy. FDI can also generate negative spillovers for the local economy known as the crowd-out effect, the balance of payment problem and the enclave economy.

However, positive effects or negative effects of FDI on economic growth of a host country much depend on local conditions. Numerous empirical studies of the impact of FDI on economic growth have found many important conditions of host countries such as:

Human capital: Borensztein et al. (1998), Xu (2000) and Li and Liu (2005) found that FDI had positive impact on growth only when the recipient country reached a certain threshold of stock of human capital.

Openness: Balasubramanyam et al. (1996) and De Mello (1997) emphasized trade openness as being crucial condition for realizing the potential growth impact of FDI.

Macroeconomic and policy-related variables: A host country having macroeconomic stability such as political stability, low inflation, balance fiscal account…is always an attractive destination for foreign investors. Additionally, if host country's government has the relevant and credible policy environment for FDI, it will significantly influence location decisions of foreign investors. Exploring the relationship among FDI, economic freedom and economic growth in Latin America countries, Bengoa and Sanchez-Robles (2003) found that FDI has positive relationship with economic growth. However, political, economic stability and liberalized markets were required conditions to realize FDI's benefits in host countries. Brooks et al. (2003) reviewed FDI's impacts in developing Asia and investigated the importance of the policy context in which FDI had positive and negative effects on economic growth in host countries. Their results suggested that the policy environment in the host country and particularly in the local area of the host county where FDI was located was very important to realize positive impacts of FDI on economic growth.

Financial development: Only in recent years, it is argued that local financial development as an important precondition for FDI to have a positive impact on the economic growth. Well-developed financial system will allocate resources efficiently. It helps domestic firms, especially medium and small-sized firms get their necessary capital to upgrade existing or adopt new technology. By this way, financial development associating with FDI can promote the process of technological diffusion (see Levine, 1997). Hermes and Lensink (2003), Alfaro et al. (2004), Lee and Chang (2009) and Chee and Nair (2010) provided empirical evidence supporting this proposition.

Among these conditions, this study will focus on the role of local financial development to promote the effects of FDI on the growth in Asian developing countries.

2.2. The role of financial development in FDI-Growth nexus

Following the approach of Hermes and Lensink (2003), the paper employs the technological change model to illustrate the link between FDI and economic growth via the financial development. Assuming technical progress showed up in the model through the variety of capital goods available. An economy is modeled by three types of agents: final commodity producers or firms, innovators and consumers. Innovators produce capital goods and producers or firms produce final goods. Every producer rents varieties of capital goods from innovators in order to produce final goods. The purchase price of the capital good is calculated basing on the present value of the returns from inventing and producing, denoted as *V(t)*. According to Barro and Sala-I-Martin (1995, p. 218), assuming that there is free entry into the business of being an inventor so that anyone can pay the R&D cost (denoted as η) to secure the present value *V(t)* and in equilibrium (*V(t) = η* holds), the constant rate of return is given by:

$$r = \left(\frac{1}{\eta} \right) L \, A^{1/(1-\alpha)} \left(\frac{1-\alpha}{\alpha} \right) \alpha^{2/(1-\alpha)} \qquad (2.1)$$

Where r is interest rate, α measures the proposition of capital income[3]; L is labor input; A is TFP parameter[4] representing the level of technology and η is the cost of R&D.

FDI is entered in the model by assuming that there are fixed unity maintenance costs, and fixed set-up costs (R&D costs, η). In accordance with Borensztein et al. (1998), more FDI leads to a decrease in the costs of innovation. The idea is that it is cheaper to imitate existing products than to innovate in new things. The possibility to imitate will increase if other countries produce more goods than host countries. This indicates that a negative relationship exists between FDI and R&D cost; i.e. higher FDI inflows bring about lower innovation costs through imitation activities. Therefore, the costs of innovation can be modeled as follows:

$$\eta = f\left(FDI\right), \text{ where } \partial\eta / \partial FDI < 0$$

In the finance and growth literature, it is well known that financial sector can stimulate economic growth via capital accumulation and enhancing the average level of technology (King and Levine, 1993a; b; Levine, 1997). Hence, the impact of financial development is introduced into the equation (2.1) via A, the level of technology. In this view, A can be written as a function of the development of the financial sector, denoted as *FINANCE*:

$$A = f\left(FINANCE\right), \text{ where } \partial A / \partial FINANCE > 0$$

Then equation (2.1) can be rewritten as follows:

$$r = \left(\frac{L}{f(FDI)}\right) f(FINANCE)^{1/(1-\alpha)} \left(\frac{1-\alpha}{\alpha}\right) \alpha^{2/(1-\alpha)} \qquad (2.2)$$

Next, to introduce the link to economic growth, Hermes and Lensink (2003) start with considering the behavior of households. It is assumed that households maximize a standard inter-temporal utility function, subject to the income constraint. The Euler equation (Barro and Sala-I-Martin, 1995, p. 63) for the growth rate of consumption is given:

$$g_C = \left(\frac{1}{\theta}\right)(r - \rho) \qquad (2.3)$$

Where θ is the elasticity of marginal utility and ρ is the discount rate.

In the steady state equilibrium, the growth rate of consumption equals the growth rate of output, denoted as g. Substituting equation (2.2) into (2.3), the link among FDI, financial development and economic growth is finally established as follows:

$$g = \left(\frac{1}{\theta}\right)\left[\left(\frac{L}{f(FDI)}\right) f(FINANCE)^{1/(1-\alpha)} \left(\frac{1-\alpha}{\alpha}\right) \alpha^{2/(1-\alpha)} - \rho\right] \qquad (2.4)$$

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[3] *α - The coefficient in Cobb-Douglas production function.*

[4] *TFP – Total Factor Productivity, denoted by A in Cobb_Douglas production function: $Y = A \times L^{\alpha} \times K^{\beta}$*

It is clear from equation (2.4) that an increase in FDI (i.e. $f(FDI)$ decreases because of $f'(FDI)<0$) leads to an increase in the growth rate of output (g) and the effect of FDI depends on the development of the financial sector (f(FINANCE)). Specifically, an increase in FDI lowers set-up costs (for technology adaptation) and raises the return on assets (r). This contributes to rise in saving and hence higher growth rate in consumption and output. This effect will be greater if a host country has higher the level of technology, i.e. well-developed financial system.

In this model, the role of financial development is recognized via the level of technology. However, this link needs to be clarified further. Firstly, the financial system has an important role in allocating financial resources for investment projects. On the one hand, it increases the volume of resources available to finance the investment by mobilizing savings. It also monitors investment projects, hence contributes to increase the efficiency of the projects carried out (see Levine, 1998). Thus, via mobilizing savings, allocating resources efficiently and monitoring investment projects, well-developed financial system will promote economic growth.

Secondly, financial institutions can help domestic firms to avoid substantial obstacles in upgrading existing or adopting new technologies. Such obstacles are money and risk. Well-developed financial institutions allow domestic firms to get necessary credit and reduce risk. Thereby, financial development encourages domestic firms to invest in new technologies or to upgrade their existing technologies. Huang and Xu (1999) said that financial institutions solved informational and incentive problems related to R&D activities, and then promote innovation. Therefore, well-developed financial institutions not only encourage domestic firms to adopt new technologies but also promote technological innovation. Thus, they have significant contributions to the process of technological diffusion and then enhance economic growth.

Thirdly, in many cases domestic firms need to be financed to upgrade their own technology, adopt new technologies, or upgrade the skills of their employees. It is clear that the development of financial system determines to what extent domestic firms may be able to realize their plans. Thus, financial development is considered as a channel through which technology spillover may take place.

Finally, the development of the domestic financial system may also determine to what extent foreign firms will be able to borrow in order to extend their innovation activities in the host country, which would further increase the scope for technological spillovers to domestic firms. Thus, the availability and quality of domestic financial markets also may influence FDI and its impact on the diffusion of technology in the host country.

In conclusion, domestic financial development plays an important role in complementing with FDI to enhancing the process of technological diffusion, thereby increasing the rate of economic growth.

2.3. Empirical studies about the role of financial development in FDI-Growth nexus

Most recent studies found the complementary impact of FDI and financial development on economic growth. Hemes and Lensink (2003) created an unbalanced panel data set of four five-year periods (1975-79, 1980-84, 1985-89 and 1990-95) of 67 developing countries. The main conclusion of this study can be if the local financial system is well developed, it can positively contribute to the process of technological

diffusion associated with FDI. Alfaro et al. (2004) used a cross-section data of 71countries over the 1975-1995 periods. Their estimation results showed that FDI had positive effects on economic growth. However, the development level of local financial markets was crucial condition for these positive effects to be realized. Similarly, Lee and Chang (2009) provide evidence that the relationship between FDI and growth is endogenously affected by the development of the domestic financial sector. Their study overcomes some of the shortcomings in previous studies by applying recent advances in panel cointegration and panel error correction models for a set of 37 countries using annual data for the period 1970-2002. The most recent study is Chee and Nair (2010). They examined whether local financial development was an important channel via which FDI enhanced growth in the Asia-Oceania region. Different roles of financial development in the developed, developing and least developed countries in the region were also considered in

their study. They employed fixed effects model and random effects model for a panel sample of 44 Asia and Oceania countries of the period 1996-2005. Their results showed that local financial development was an important channel via which FDI contributed to increased economic growth in Asia-Oceania region. The role of financial development in developing countries was as important as in developed countries. Whereas, this role is more important in least developed countries because the complementary impact of FDI and financial development on growth was higher.

3. MODEL, METHODOLOGY AND DATA

3.1. Empirical Model

Firstly, the paper examines whether FDI has direct effect on economic growth without consideration of the effect of financial development. It is suggested to bring FDI and other control variable into the model. Then, the first regression model is specified as follows:

$$GROWTH_{it} = \alpha_{it} + \beta_1 FDI_{it} + \beta_2 CONTROLS_{it} + \grave{o}_{it} \qquad (3.1)$$

Secondly, the paper examines whether the interaction between FDI and financial development affects growth. It is suggested to bring FDI and financial development into the model. FDI and

financial development are included into the model to ensure that the interaction term does not proxy for FDI or financial development. Then, the second regression model is specified as follows: (3.2)

$$GROWTH_{it} = \alpha_{it} + \beta_1 FDI_{it} + \beta_2 \left(FDI_{it} \times FINANCE_{it} \right) + \beta_3 FINANCE_{it} + \beta_4 CONTROLS_{it} + \grave{o}_{it}$$

$$(3.2)$$

Where $GROWTH_{it}$ is per capita growth rate of country i in the year of t; FDI_{it} is the net FDI inflows as percentage of GDP of country i in the year of t; $FINANCE_{it}$ is one of indicators of financial development of country i in the year of t: LLY- the share of M3 or M2 (when M3 is unavailable) in GDP or PRIVATECREDIT- the share of

total credits to the private sector in GDP; $FDI_{it} \times FINANCE_{it}$ are important variables of interest used to test for the significance of financial markets in enhancing the positive externalities of FDI on economic growth; $CONTROLS_{it}$ consists of other variables that affect economic growth (control variables: iGDP, INVEST, EDUC,

OPENNESS, INFLATION, GOVEXP, POP, GOVEFF); is error term.

The descriptions of all variables are provided in the table 1.

3.2. Methodology

According to Baltagi (2005), panel data has several undeniable advantages compared with cross-section data and time series data such as more degrees of freedom, less multicollinearity and more variation in the data. Especially, panel data allows us to have different assumptions on unobserved effects. There are several types of panel data models and each of them has its own characteristics and advantages. In this paper, we employ linear static models for panel data named constant coefficients model or pooled regression model (POOLED), fixed effects regression model (FEM) or least square dummy variables model and random effects regression model (REM). We analyze all models and employ several kinds of test including poolability test, Hausman test, LM test, fixed effects tests and Wald tests to select the most appropriated estimated model.

3.3. Data collection

Data is collected from many sources: World Development Indicators (World Bank, 2011), A New Database on Financial Development and Structure (World Bank, updated November 2010), Aggregate Governance Indicators (World Bank, 2010), UNCTAD Statistics (UNCTAD, version 8.1), Educational attainment in the world 1950–2010 (Barro & Lee, 2010) and Classifications of countries (IMF, 2011).

Table 1. Variables Definitions and Data Sources

Abbreviations	Variables	Source
GROWTH	Growth rate of real Gross Domestic Product (GDP) per capita (annual %)	World Development Indicators (WDI), World Bank (2011)
FDI	The net Foreign Direct Investment inflows as a percentage of GDP	UNCTAD Statistics , UNCTAD (version 8.1)
LLY	Liquid liabilities - the money and broad money (M2) as percentage of GDP	World Development Indicators (WDI), World Bank (2011)
BANK	the ratio of commercial bank assets to the sum of commercial bank and central bank assets	New Database on Financial Development and Structure, World Bank (2010)
PRIVATECREDIT	Total credits issued to the private sector as percentage of GDP	World Development Indicators (WDI), World Bank (2011)
iGDP	Natural logarithm of the real GDP per capita in US$ at period (t-1)	World Development Indicators (WDI), World Bank (2011)
INVEST	Real domestic investment as percentage of GDP by excluding the percentage of FDI inflows from the gross domestic investment	World Development Indicators (WDI), World Bank (2011)
OPENNESS	Natural logarithm of the sum of export of goods and services plus the import of goods and services as a percentage of GDP	World Development Indicators (WDI), World Bank (2011)

GOVEXP	total expenditure of the government as a percentage of GDP	World Development Indicators (WDI), World Bank (2011)
POP	Population growth rate (annual %)	World Development Indicators (WDI), World Bank (2011)
INFLATION	the change in the rate of the GDP deflator	World Development Indicators (WDI), World Bank (2011)
EDUC	average years of secondary schooling for aged 25	World Development Indicators (WDI), World Bank (2011) and Data of Barro & Lee (2010)
GOVEFF	Government effective index	Aggregate Governance Indicators, World Bank (2010)
FDIxFINANCE	The interaction term between FDI and financial development: FDIxLLY, FDIxBANK and FDIxPRIVATECRIT	

The choice of the countries in Asia depended on the availability of published data on variables of interest as discussed in the above section. Unfortunately, not all Asian developing countries have sufficient data available, especially data of financial indicators. Moreover, when data is available, the time span is limited. To overcome insufficient data problems, we groups 24 developing countries in according to the published data of each indicator of financial development in the same time span (1995-2009). Therefore, the research has a balanced panel data with 360 observations. The full list of countries is as follows: Armenia, Azerbaijan, Georgia, Jordan, Lebanon, Syrian Arab Republic, Turkey, Iran, China, Mongolia, Bangladesh, India, Nepal, Pakistan, Sri Lanka, Kazakhstan, Kyrgyzstan, Cambodia, Laos, Malaysia, Indonesia, Philippines, Thailand, Vietnam.

4. EMPIRICAL RESULTS AND DISCUSSION

4.1. Examining the impact of FDI, on its own, on economic growth

The regression results of the model (3.1) show that the estimated coefficient of FDI is positive but statistically insignificant correlated with growth. This means that FDI does not have directly significant impact on economic growth in Asian developing countries. In other words, without essential conditions in the host country, FDI alone may not enhance economic growth. This supports literature suggesting that positive effects or negative effects of FDI on economic growth of a host country much depend on local conditions. FDI may not generate technological transfer or backward and forward linkage with local suppliers and producers in this case.

This result is similar to the conclusions of some other empirical studies. Borenztein et al. (1998) utilized cross-country data from industrial countries to 69 developing countries over two decade 1970-1979 and 1980-1989 to test the effect of FDI on economic growth. They found that the direct effect of FDI on growth was negative. However, FDI associating with a certain level of human capital had significantly positive effect on economic growth. In another research, Hermes and Lensink (2003) also found FDI did not have significantly positive direct effect

on economic growth when observing 67 countries in Latin Africa and Asia in the period of 1970-1995. Utilizing the cross-country data of 71 countries (1975-1995) and 39 countries (1980-1995) ranging from developing to developed countries, Alfaro et al. (2004) showed that FDI alone played a vague role in promoting economic growth.

The sign of estimated coefficients of control variables is as expected and all statistical significant except that GOVEFF is insignificant. The significantly positive effect of INVEST on GROWTH implies that higher domestic investment contributes to growth. When holding other factors constant, an increase of 1% in the ratio of real domestic investment to real GDP is associated with an increase of 0.11% in growth rate of real GDP per capita. This is consistent with the theoretical and empirical literature underling that investment is a key determinant of economic growth. OPENNESS is positive and significant correlated with GROWTH. When other factors are controlled constant, an increasing of 1% in total exports and imports as the percentage of GDP is associated with an increase of 0.42% in growth rate of real GDP per capita. This result is similar to the finding of Sachs and Warner (1995), Edwards (1998), Dollar, and Kraay (2000). The estimated coefficient of EDUC is statistically significant and positive correlated with

GROWTH. It implies that the higher level of human capital will enhance economic growth. This is consistent with endogenous growth models pointing out human capital as the main source of growth. A large number of empirical evidence have showed that the level of human capital has a significantly positive effect on growth (Barro, 1998; Mankiw et al., 1992; Barro and Sala-I-Marin, 1995). Initial per capita income, total government expenditure and inflation have negative and significant effect on growth. This result is similar to the findings of many other studies such as Barro (1998), Sala-I-Martin (1997) …

4.2. Examining the role of financial development in FDI-Growth nexus

The regression results of the model are summarized in the below tables.

The effect of the interaction term (FDIxFINANCE) on GROWTH:

The main finding of this research is that the interaction between FDI and financial development has positive and highly significant effect on economic growth. As a result, FDIxFINANCE has statistical significance at the level of 1% when LLY and PRIVATECREDIT are used as financial development indicators. It is consistent with the theoretical framework about the important role of financial development via which FDI can have positive impact on economic growth.

Table 2. REM regression model (3.1) results

Independent Variables	Dependent Variable: GROWTH
	REM Model (3.1)
FDI	**0.044**
	(0.051)
iGDP	-0.921**
	(0.469)

INVEST	0.111***
	(0.036)
OPENNESS	1.164*
	(0.674)
GOVEXP	-0.201***
	(0.076)
POP	-0.763**
	(0.346)
INFLATION	-0.032***
	(0.006)
EDUC	0.044**
	(0.020)
GOVEFF	0.245
	(0.777)
Constant	4.057
	(4.123)
Observations	360
R-squared	0.313
Number of country	24
Chi-sq	74.086
Prob > Chi-sq	0.000

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
Chi-sq: A test (F) to see whether all coefficients in the model are different from zero. If the value of (Prob > Chi-sq) is less than the significant level α% then the model is ok.

Table 3. Two-way FEM regression model (3.2) results

Independent Variables	Dependent Variable: GROWTH	
	(3.2a) LLY	(3.2b) PRIVATECREDIT
FDI	-0.247***	-0.222**
	(0.090)	(0.096)
FINANCE	-0.060***	-0.051**
	(0.023)	(0.022)

FDIxFINANCE	**0.004*** **	**0.005*** **
	(0.001)	(0.002)
iGDP	-6.867**	-6.981**
	(2.871)	(2.870)
INVEST	0.133***	0.147***
	(0.044)	(0.048)
OPENNESS	4.119**	3.843**
	(1.707)	(1.628)
GOVEXP	-0.207*	-0.228*
	(0.120)	(0.120)
INFLATION	-0.041***	-0.041***
	(0.007)	(0.007)
GOVEFF	2.806**	2.742**
	(1.247)	(1.214)
Constant	36.379**	37.405**
	(17.520)	(16.860)
Observations	360	360
R-squared	0.580	0.575
Adj. R-squared	0.519	0.512
F	7.484	7.083
Prob > F	0.000	0.000

*Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1;*
F – A test (F) to see whether all coefficients in the model are different from zero.
If the value of (Prob > F) is less than the significant level α% then the model is ok.
(3.2a) – The model 3.2 using LLY as financial development indicator;
(3.2b) – The model 3.2 using PRIVATECREDIT as financial development indicator

The effect of FDI on GROWTH:

The estimated coefficients of FDI are significantly negative though financial development indicators were employed. This may be because without domestic financial market, FDI has no effect on economic growth. As mentioned in literature review, services provided by domestic financial market include allocating resources, mobilizing savings, monitoring and evaluating investment projects, managing risks, facilitating transactions, encouraging local firms to adopt new technologies or to upgrade their existing technologies and promoting innovation. All these services are indispensable for technological diffusion and economic development.

The effect of financial indicators (LLY and PRIVATECREDIT) on GROWTH:

The estimated coefficient of LLY is negative and significant at the level of 1%. The estimated coefficient of PRIVATECREDIT is also negative and significant at the level of 5%. This implies that financial development, on its own, does not have positive effect on economic growth. It is possibly explained by the level of financial sector development in Asian developing countries does not reach the certain threshold to have positive effect on growth. It also may be because of lacking data of stock markets. This result is similar to the findings of many empirical studies.

The threshold level of financial development above which FDI starts to have positive effects on economic growth:

In order to determine the threshold level of LLY and PRIVATECREDIT above which FDI starts to have positive effects on economic growth, we take the first derivative of the equation (3.2) with respect to FDI.

The values of β_1 and β_3 are obtained from the results in the table 3. By setting the first derivative of the above equations equal to zero, we get the threshold

$$\partial GROWTH\Big/\partial FDI = \beta_1 + \beta_3 LLY = -0.247 + 0.004LLY$$

$$\partial GROWTH\Big/\partial FDI = \beta_1 + \beta_3 PRIVATECREDIT = -0.222 + 0.005PRIVATECREDIT$$

level of LLY and PRIVATECREIDT above which FDI has positive effect on GROWTH. Then the threshold level of LLY is 0.247/0.004 = 61.75 and the threshold level of PRIVATECREDIT is 0.222/0.005 = 44.4.

Since LLY is the money and quasi money (M2) as a percentage of GDP and PRIVATECREDIT is the value of credits to the private sector as a percentage of GDP. The results imply that the money and quasi money (M2) as a percentage of GDP should be higher than 61.75% in order that FDI has positive effects on economic growth. The credits to private sector as a percentage of GDP should be greater than 44.4% in order that FDI has positive effects on economic growth. There are only five in the 24 countries (about 20.8%) having sufficient level of financial development. This indicates that from the policy perspective, the governments of Asian developing countries should consider many issues relating to improving the domestic financial systems as well as

earning benefits of FDI in order to enhance economic growth.

The effect of control variables on economic growth:

The estimated coefficients of control variables are all statistical significant irrespective of whether LLY or PRIVATECREDIT is employed. Initial per capita income, total government expenditure and inflation have negative and significant effect on growth. This result is similar to the findings of many other studies such as Barro (1998), Sala-I-Martin (1997) …

The positive effect of investment on growth implies that higher domestic investment contributes to growth. This is consistent with the theory of both neoclassical and endogenous growth models. Openness to trade has positive and significant effect on growth. It implies that economies that are more open to trade have higher GDP per capita and grew faster. This result is similar to the finding of Sachs and Warner (1995), Edwards (1998), Dollar,

and Kraay (2000). The positive effect of government effective index on growth indicates the important of the effectiveness and efficiency of government operations in Asian developing countries.

5. CONCLUSIONS

This research investigated the role of domestic financial development played in enhancing FDI's positive impact on economic growth in Asian developing countries. The research also determined the threshold level of financial development above which FDI started to have positive effects on economic growth. The empirical analysis used balanced panel data of 24 Asian developing countries in the period 1995-2009. The random effects model was the most appropriate model for the first regression model. The two-way fixed effects regression model was the most efficient and the best selected for the second regression model. The results support the theoretical and empirical literature in general, such as Hermes and Lensink (2003), Alfaro et al. (2004), Lee and Chang (2009), Chee and Nair (2010), and provide new evidence for Asia developing countries: the development of domestic financial system is a crucial condition for exploiting benefits of FDI efficiently.

The main findings in this research are very useful for the governments of Asian developing countries in compiling relevant policies to exploit benefits of FDI efficiently as well as to attract more FDI. Only 20% developing countries in our data have sufficient level of financial development. This leads to the inefficient use of FDI in most Asia developing countries. Therefore, it is time that governments should consider the cost of policies aiming at attracting more FDI versus those that attempt to improve local conditions in general and domestic financial system in particular.

In order to avoid unexpected negative effects of FDI on local economy, one of the most efficient ways is that governments should have appropriate intervention policies aiming at strengthening and developing domestic financial system. As Alfaro et al. (2004) and Lee and Chang (2009) argued that it could be easier to attract more FDI in the long-run if a host country had well-developed financial system supplemented with appropriate economic policies. Then, Asian developing countries should first strengthen their financial system before liberalizing policies to enlarge FDI inflows. Government of Asian developing countries should be aware that better local conditions not only attract foreign investments but also allow their countries to maximize the benefits of foreign investments, thereby increasing the rate of economic growth.

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