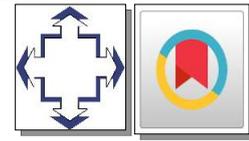# Foreign Direct Investment Spillovers and Economic Growth: Evidence from Asian Emerging Countries

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ABSTRACT

Research on FDI in promoting economic growth has been the focus of recent decades, especially in developing countries. Foreign direct investment can be one of the main objectives in increasing economic growth. FDI is assumed to indirectly contribute to economic growth through a spillover effect on the absorption capacity of a country by increasing the stock of human capital and the quality of institutions. This study aims to analyze the spillover effect of FDI on economic growth in Asian emerging markets. The data were analyzed using dynamic panel regression (GMM) during 2008-2017 period with STATA 14 software.The results in this study strongly indicate that the spillovers of FDI is proven to be able to drive economic growth through human capital and institutions in Asian emerging markets.

1. Introduction

Research on FDI in promoting economic growth has been the focus of recent decades, especially in developing countries. Foreign direct investment can be one of the goals in increasing economic growth (Slesman et al., 2015). FDI is assumed to directly affect economic growth by contributing to capital formation and complementing domestic investment. However, in line with the current endogenous growth model, FDI can also be assumed to indirectly contribute to economic growth through the absorption of a country by increasing the stock of knowledge and the quality of institutions by developing technological growth in the host country.

The aggregate global economic growth has fluctuated quite a bit since the beginning of the global financial crisis in 2008 until it has slowed down in the last six years or more precisely from 2013 to 2018. Statistically it begins by touching the lowest figure around -1,7% in 2008 then increases to 4,0 % in 2009. Furthermore, growth was relatively stagnant at 2,5% -3,0% in 2013-2018. Emerging market countries in Asia have also experienced the same thing, where economic growth is relatively stagnant, but their average economic growth is always higher than the world average, which is around 5% -5,5%.
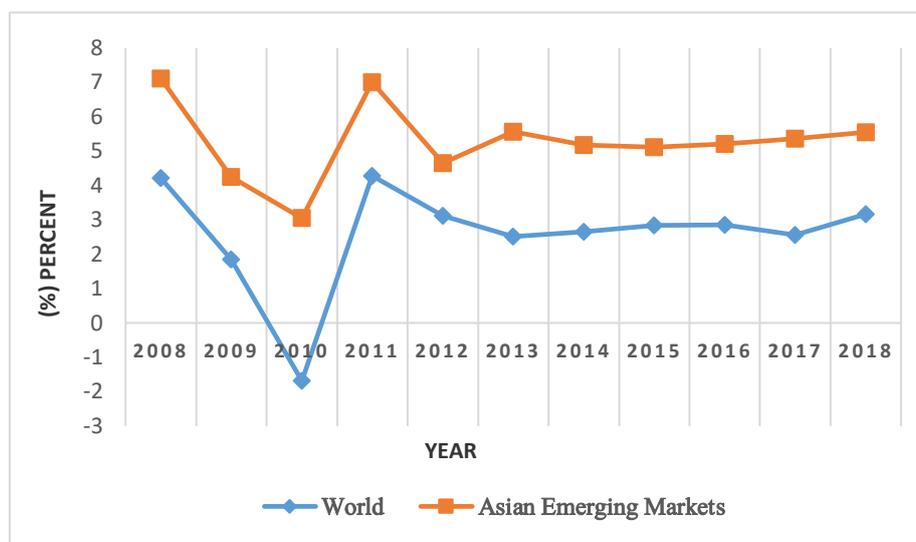

Figure 1. The Growth of Gross Domestic Product in 2008-2018
Source: World Bank, data processed

According to the World Economic Outlook report, this situation was caused by the trade war between America and China (IMF, 2019). The effects of the conflict will lead to global uncertainty due to the dependence of the economy on those two countries and it will have several effects, such as slowing down of foreign direct investment.

On the other side, is quite interesting if we compared the growth of FDI inflows in emerging markets economies (EME) in Asia where currently is lower than the rest of the world. This condition was triggered by the global financial crisis which had an impact on FDI that largely concentrated in countries besides EME Asia. (**Fig. 2)**

According to UNCTAD (2010), most developing countries only attract a relatively small amount of foreign direct investment inflows compared to their efforts to develop the economy towards a wider globalization. This statement is relevant with OECD (2012) where FDI is very important for developing countries in order to gain some benefit for economic growth process. FDI makes some spillover in the form of knowledge to local workers where the level of human capital in the host country is determined by how much FDI can be attracted and how local companies can absorb the benefits of this technology spillover (Adefabi, 2011).
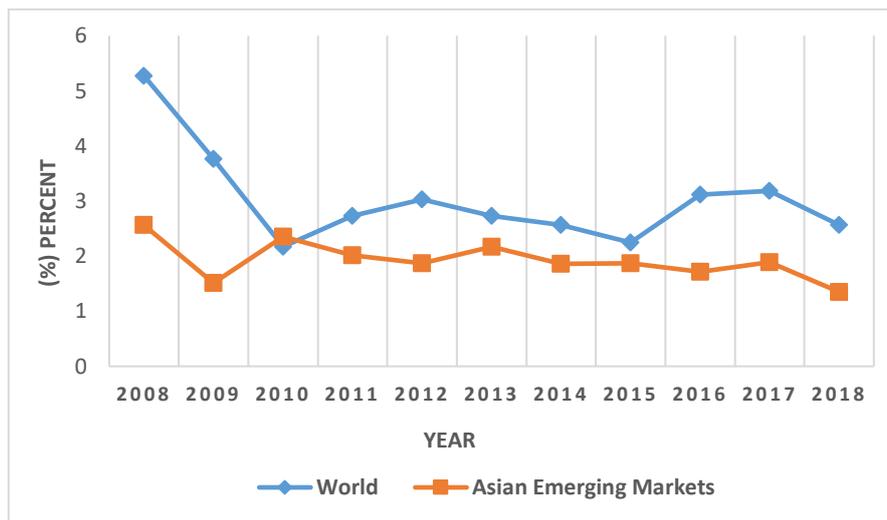
Figure 2. The Growth of Net FDI Inflows in 2008-2018
Source: World Bank, data processed

Although FDI spillovers are believed to arise through various channels such as the introduction of new production processes, managerial capabilities, and technology transfer to domestic industry, many researchers suggest that the positive effect of FDI spillovers on the economy depends on the ability of the host country to absorb new knowledge and other abilities that affect the quality of human capital (Meyer & Sinani, 2009).

Borensztein, E., De Gregorio, J., and Lee (1998) were first to emphasized the importance of absorptive capability in the host country, which is measured by the accumulation of human capital in absorbing the technology spillovers of foreign companies. Even though developing countries can try to adopt technology with importing intermediate goods and attracting multinational companies but it still depends on the country's ability to absorb technology.

On the other hand, the host country's economic system arrangements may be important because the quality of these institutions will affect the host country's ability to absorb spillover effects. At the same time, foreign direct investment is considered important to improve the growth prospects of developing countries. Cooray et al. (2017) focused on the study of the role of political institutions and trade liberalization in exploring the determinants of labor force participation rates in sub-Saharan African countries found that countries with stronger political institutions can increase the benefits of trade openness, which can contribute to the increasing economic activities of low-income countries.

The purpose of this study is to analyze the effect of Foreign Direct Investment spillovers on economic growth in the Asian Emerging Markets. The use of aggregate data across countries in this study is useful for increasing understanding of the importance of economic factors as previously described in channeling the contribution of FDI to economic growth.

2. Literature Review

Economic Growth

Mankiw (2006) has the idea that economic growth describes the impact of economic activities in generating additional income in society at a certain time. Where economic activity is a process of using input or production factors to produce output. In his study, explained that GDP is the right indicator in measuring economic growth because it reflects the total added value that occurs in a production activity. Indirectly, the increase in GDP shows remuneration from each production factor that has been used in these production activities.

The classical growth theory explains the importance of natural resources as a factor in the production process because the availability of natural resources has a maximum effort in increasing economic growth (Samuelson, 2010). On the other hand, the growing number of workers (population) will cause a decrease in the productivity of the "Law of Diminishing Returns". Furthermore, the Solow growth theory or often called neoclassical growth theory explains that growth is based on production factors and uses determinants such as labor growth, capital accumulation, and technological progress (exogenous). There are several assumptions that need to be known in this theory. The first assumption is constant return to scale, where Solow (1956) considers the economy to be in a large capacity so that the increase in labor and capital will have an impact on changes in the amount of output that are the same. Second, there is a perfect substitution between labor and capital. Third, there will be diminishing marginal productivity of each production factor. Finally, the theory of endogenous growth was first put forward by Romer (1986) where he said that economic growth can be influenced by the level of human capital through technological development. This theory is supported by Lucas (1988) who argues that human capital has the same role and is also needed in the production process besides physical capital. Endogenous theory pays attention to the elements of externality that can create increasing returns to scale, so that it can complement the previous assumptions held by neo-classical theory, namely that it only has a constant return to scale.

Human Capital

Human capital is arguably one of the most important factors in driving economic growth in recent years. Most countries in the world are starting to develop factors that can develop human capital. Human capital can be formed in various ways, such as increasing the level of education and training (Cooray et al., 2011). Other factors such as health, access to various basic services and social stabilization also need attention (Reza, F., & Widodo, 2013)

Schultz (1961) states that humans can also play a role as capital in production factors as well as physical capital and technology. It can be said that human capital is formed from a qualitative dimension. Various aspects that support the formation of human capital will affect a person's productivity. This is measured by the various abilities and expertise that each individual has, the higher the skills it have, the higher human capital that can be reflected.

The relationship between human capital and economic growth has been studied both empirically and theoretically. Contrary to the previous concept of economic growth theory where technology was assumed to be an exogenous variable, Romer (1986) and Lucas (1988) initiated the endogenous growth theory which was previously discussed by Solow (1956) explicitly as a factor of production. There have been several studies that have discussed the relationship between human capital and economic growth, including the pioneering studies by Barro (1991) and (Mankiw et al., 1992). However, the results obtained are still not valid, sometimes negative even insignificant results were found because the use of variables to describe human capital is still a debate today. Research by (Barro et al., 1992) found that male educational have a positive effect on economic growth when compared to female schooling. At the country level in Asia, (Abbas & Nasir, 2001) found both secondary and tertiary education had a positive effect in driving economic growth. This is also in line with the research of Shaihani et al. (2011) where secondary education is positively related to output levels in Malaysia, while Self & Grabowski (2004)using primary education as a proxy for human capital found positive results on economic growth in India.

Institutional Quality

Institutions are man-made rules that can influence behavior and there are sanctions that are imposed in the event of a violation for the purpose of reducing the risk of interaction (Groenewegen, 2004). Institutions are formed to reduce uncertainty in human relationships and to define what each

individual may or should not do (North, 1993). They are also an endogenous components in influencing economic growth (Romer, 1990).

Differences in the level of quality of the institute are closely related to economic performance in cross-country studies (Hall & Jones, 1999; La Porta et al., 1999). Countries with good institutional quality have good economic conditions while countries with poor quality institutions tend to perform worse. Good institutions, such as the effective government, good regulations, rule of law and lack of corruption can establish a healthy circumstances between domestic and foreign companies by provide them with a competitive playground and encourage them to compete healthy. On the other hand, bad institutions lead to increased transaction costs and higher risk, which will further lead to reduced investment and long-term commitment of foreign companies to entering the country. The institutional quality of a country is considered to be an important factor influencing economic growth of a country. Much research has looked at the role of institutional quality in attracting FDI to the country (Ali et al., 2010; Bénassy-Quéré et al., 2007; Daude & Stein, 2007).

Foreign Direct Investment

Carbaugh (2004) FDI as a form of acquisition in controlling the profits of foreign companies or existing facilities in the destination country for investment made by foreigners. According to Sukirno (2006), foreign direct investment is a form of international capital flow from other countries with the aim of expanding and adding to companies in other countries. FDI does not only utilize the resources of the destination country but also participates in the supervision of the investments that have made. That said, when foreign investors invest in a host country, technology advances and new ideas from the home country are transferred to the host country so that it can increase market competition. Greater competition not only increases efficiency but also contributes to lower prices for consumers. Meanwhile, according to Feldstein (2000) the inflow of FDI can have several positive impacts on the destination country. First, foreign capital flows can reduce the risk of capital ownership by diversifying through investment. Second, it can shape global capital mobility in reducing government mistakes in setting policies.

According to Krugman & Obstfeld (2009), a foreign company has bought more than 10 percent of the shares of a domestic company, or it has built a new facility for its production, this investment is referred to as an inflow of Foreign Direct Investment (FDI). In fact, investments made by domestic companies to foreign companies with the aim of increasing production are called Foreign Direct Investment (FDI) outflows. Based on this, FDI is grouped into 2 (two) types, namely, (i) Greenfield FDI, explaining the form of investment from foreign companies with the aim of only building production units in other countries; (ii) non-greenfield FDI, describes the type of foreign investment for the purpose of acquiring or having a way of buying part of the ownership from a domestic company.

FDI indirectly has a positive impact on the production process through technology transfer, innovation and quality improvement of institutions by providing a spillovers effect. Spillovers are a form of the result of economic activity carried out by one individual on the welfare of another individual with an abnormal system mechanism. Based on this definition, it can be concluded that spillovers at least need more than one person, one of which is the cause (Nicholson, 2002)

Technology spillovers are the advantages or benefits that are felt from the existence of knowledge in the field of technology at the level of productivity and innovation that comes from other countries. The perceived absorption of technological spillovers cannot be fully felt, but depends on other supporting factors such as costs, labor and capital (Ahmed, 2012; Kuo & Yang, 2008).

Endogenous growth theory implies that the FDI spillover has a positive impact on the productivity and growth of domestic firms (Barro et al., 1992; Grossman & Helpman, 1991). There has been quite a lot of research that discusses the effect of FDI on economic growth in a country, but

most of them only see the impact directly and not examine the spillovers effect that comes from FDI. Evidence from the literature on FDI and economic growth suggests that the effect of increasing FDI to a country depends on the absorptive capacity of developing countries to maximize the benefits that derived from technology transfer and the productivity spillovers (Hayat, 2019; Li & Tanna, 2019)

Borensztein, E., De Gregorio, J., and Lee (1998) studied the influence of human capital on the relationship between foreign direct investment and the growth of GDP per capita found that only when the host country reaches the minimum level of human capital, FDI can contribute to economic growth. Recent research conducted by Slesman et al. (2015) provides strong evidence that foreign capital inflows (including foreign direct investment) have a positive impact on economic growth to countries with high institutional quality, while countries with poor institutional quality tend to have a negative or insignificant impact. This research was supported by Li & Tanna (2019), they found that the spillover effects of foreign direct investment tend to have a positive impact on institutional quality rather than human capital.

In addition to the macro studies that investigating the impact of FDI on economic growth, there are many micro studies that examining the impact of FDI spillovers on the growth of productivity ind domestic firms. For example Javorcik (2004) used Lithuanian industry data from 1996-2000 found that FDI can increase the productivity of domestic firms through vertical (inter-industry) rather than horizontal (intra-industry) relationships. The same study by Liu & Zou (2008) used industry data from 1995-1996 to investigate the productivity impact of overseas manufacturing in China shows a results that foreign direct investment spillovers through vertical relationships are negatively correlated with productivity growth of domestic firms in the short run, but have a positive effect in the long run.

The main focus of micro research is to study the impact of foreign direct investment on productivity growth and the industrial relations (vertical or horizontal) related to the transmission of these effects. According to a recent meta-analysis study conducted by Demena & van Bergeijk (2017), only about 20% of the 69 empirical studies published between 1983 and 2013 found that FDI spillovers were affected by host country conditions. In this case, it is found that the education and institutional capacity of the host country are important factors that promote foreign direct investment to increase productivity. For example, by using industry-specific data measures, Lin et al. (2011) and (Liu et al., 2016) found that higher levels of human capital contributed a lot to the spillover effects of FDI, which led to the increase in productivity of Chinese companies. This also following by study by Marcin (2008) that using industry-level data found a higher R&D intensity of domestic companies supports the vertical spillover of FDI.

In this study, macro-level is used data to investigate the effects of human capital and the quality of economic institutions in driving economic growth that derived from FDI inflows to emerging Asian markets. Demena & van Bergeijk (2017) believe that "FDI spillovers have not been extensively studied in developing countries. Recent study conducted by De Mello (1999) found supporting evidence on the productivity growth effects of FDI for a cross-sectional sample in developed and developing countries, while a more recent study by Kose et al. (2009) and Bekaert et al. (2011) provide broader evidence of positive productivity growth from institutional openness. They emphasize the importance of institutional quality in generating higher productivity growth, while Borensztein, E., De Gregorio, J., and Lee (1998) and Cooray et al. (2014) highlighted the relevance of human capital in generating positive growth effects from FDI. Based on previous research, this study evaluate the role of human capital and institutions in promoting economic growth from FDI.

3. Research Method

This study adopts the neo-classical (Cobb-Douglas) approach in calculating the growth of total factor productivity (TFP) as in research by Ahmed (2012) and Li & Tanna (2019) as follows:

$$Y_{it} = A_{it}K_{it}^{\alpha}L_{it}^{\alpha} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots..(3.1)$$

Where:

Y   = Output
A   = Technology
K   = Capital
L   = Labor
i = Country (*cross country*)
t = Time

   The model can be extended to include other variables that can affect the Y level. For example, the technology parameter A is a function of a non-physical input variable. As discussed in the previous literature, this is influenced by the spillover effect, both external and internal, which is highly dependent on the absorption capacity of a country. Therefore, the technology parameter A can be denoted as:

$$A = f(international\ spillover, absorptive\ ability) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots..(3.2)$$

   The variable forming the international spillover effect is FDI. Meanwhile, the absorption capacity of a country is represented by the quality of the institution. Romer (1990) added that technology and human capital are important aspects in driving economic growth. Based on this statement, this research incorporates technological elements that come from the inflow of foreign direct investment as well as human capital and institutional quality as a factor in the ability of a country to capture technology.

   This study is using a quantitative method with dynamic panel data regression Generalize Method of Moment (GMM) as an technique analysis. The GMM model that used in this study refers to previous research by Li & Tanna (2019). Final form of model can be obtained by substituting equation (2) into equation (1) then changing the Cobb-Douglas function to natural logarithmic units. Modifications in the model are carried out in order to achieve the research objectives so as to produce the following econometric equations:

$$lngdp_{it} = \alpha + \beta_1 lngdp_{it-1} + \beta_2 lnlabor_{it} + \beta_3 lngfcf_{it} + \beta_4 lnhc_{it} + \beta_5 fdi_{it} + \beta_6 wgi_{it} +$$
$$\beta_7(fdi_{it} * hc_{it}) + \beta_8(fdi_{it} * wgi_{it}) + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots..(3.3)$$

Where:

$lngdp$ = Gross domestic product
$lngdp_{it-1}$ = Lag gross domestic product
$lnlabor$ = Labor units
$gfcf$ = Gross fixed capital formation
$lnhc$ = Human capital
fdi = Foreign direct investment
wgi = Institutional quality
$fdi*hc$ = The spillovers between fdi and human capital
$fdi*wgi$ = The spillovers between fdi and insititutional quality
ε_{it} = Error term
i = Country (*cross country*)
t = Time

   The type of data used in this study is secondary data in the form of panel data taken from the World Bank. The period used covers 2008-2017 and consists of 8 emerging market countries in Asia according to the Morgan Stanley Capital Information (MSCI) version which includes China, India,

Indonesia, Korea, Malaysia, Pakistan, Philippines, and Thailand. The following is a measurment of each variable used in this study:

Table 1. Definition of Variables

Variable	Operational Definition	Data Source
gdp	Annual GDP based on constant 2010 (US$)	World Development Indicators (World Bank)
labor	Population aged 15-64 years involved in economic activity (unit)	World Development Indicators (World Bank)
gfcf	Expenditure on adding fixed assets to the economy and net changes in inventories based on constant 2010 (US$).	World Development Indicators (World Bank)
hc	Gross school enrollment teritary (%)	World Development Indicators (World Bank)
fdi	Ratio of investment entering a country or net foreign direct investment inflows (% of GDP)	World Development Indicators (World Bank)
wgi	Dummy variable from the Worldwide Governance Indicators Index. D = 1, if the country has a WGI score above the average; D = 0, if the country has a WGI value below the average.	World Governance Indicator (World Bank)
fdi*hc	The interaction variable between FDI and human capital.	World Development Indicators (World Bank)
fdi*wgi	The interaction variable between FDI and institutional quality	World Development Indicators/World Governance Indicators (World Bank)

The human capital variable in this study uses teritary gross school enrollment because it is considered to describe the highest level of education as well as a requirement for the success of completing secondary education.

Furthermore, the variable of institutional quality is measured using the Worldwide Governance Indicators index from the World Bank. WGI indicators cover six aspects that covers, voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, control of corruption. Institutional quality is measured using a dummy variable, based on the average WGI value in Asian emerging markets (Li & Tanna, 2019). D = 1, if the country has a WGI index value above the average; D = 0, if the country has a WGI index value below the average.

The form of the spillover effect of FDI with human capital is captured through the interaction variable between FDI and human capital (fdi * hc). In research by Ahmed (2012) and Kuo & Yang (2008), the interaction between these two variables can also be referred to as absorptive capacity or how an individual captures the transfer of knowledge that occurs from the spillover effect of FDI. The spillover effect of FDI on institutional quality is captured through the interaction variable between FDI and institutional quality (fdi * wgi). In reasearch by Li & Tanna (2019) both of their interactions illustrate how FDI can change the quality structure of a country's institutions.

4. Results and Discussion

This study uses the dynamic panel method Generalize Methods of Moment (GMM), which is a combination of time series and cross section data to analyze the influence of foreign direct investment spillovers in driving economic growth in Asian emerging markets (China, India, Indonesia, Korea, Malaysia, Pakistan, Philippines, and Thailand).

Table 2. Estimation Result Dynamic Panel

	Dependent Variable: lngdp
	SYS-GMM
l.lngdp	0.780***
	(0.035)
lnlabor	0.013**
	(0.006)
lngfcf	0.174***
	(0.028)
lnhc	-0.013*
	(0.007)
fdi	-0.057**
	(0.022)
wgi	0.005
	(0.006)
fdi*hc	0.014**
	(0.006)
fdi*wgi	0.011**
	(0.005)
Observations	80
AR (1)	[0.039]
AR (2)	[0.597]
Sargan test	[0.252]
Prob > F	0.000

Source: Analyzed by STATA 14

The GMM estimation shows the results can be obtained from various variables. First, labor has a significant effect on the 5% level and has a positive coefficient value of 0.013. This indicates that a 1% percent increase in labor will increase economic growth by 0.013 with the assumption of another variable, ceteris paribus. This finding is in line with research belonging to (Ahmed, 2012; Kuo & Yang, 2008; Ouyang & Fu, 2012) that labor has a positive and significant effect in boosting productivity and economic growth. Labor in a country with a relatively high population (labor abundant) tends to have an important role in the success of achieving economic growth so that it is not uncommon for some countries to be more labor intensive than capital intensive because they can run the production process more efficiently.

Population and labor are considered as important factors in driving economic development (Todaro, 2002). The number of workers currently in the economy indicates the availability of employment, so indirectly there is an expansion in the level of employment and an increase in the number of labor force is expected to have an effect on the growth of a region's production at a certain time. In addition, Adam Smith and Solow's theory of growth also states that the labor force is one of the inputs that will drive the productivity of the production process (Romer, 1986).

The GFCF variable shows a positive coefficient estimate of 0.174 and is significant at the 1% level in promoting economic growth. This condition is in accordance with the neo-classical and endogenous growth theory which explains capital as an important input in increasing production along with labor and technology (Todaro & Smith, 2006). Apart from that, the accumulation of capital which includes land and equipment is an important factor in driving economic growth (Todaro, 2002). This finding is supported by research belonging to (Ahmed, 2012; Muhammad, 2019), that capital has a positive and significant effect in boosting productivity and economic growth.

Third, human capital shows a negative and significant value in driving economic growth. This finding is not in accordance with the endogenous theory where economic growth can be influenced by the level of human capital through technological development (Romer, 1986). One of the main reasons is because the proxies that using in explaining the human capital variable which is still a matter of debate to this day. Some examples such as research by Barro & Lee (2013)use literacy figures to describe the level of human capital. Furthermore, Barro et al. (1992) is the first study to use a secondary enrollment rate and Islam (1995) uses the average length of schooling of a population over 25 years to be a proxy for human capital variables.

This study uses tertiary variable enrollment rates as a proxy for the human capital variable which is considered higher when compared to previous studies. Tertiary education is discussed as a condition for successful completion of secondary education. The effects of tertiary education on economic growth in developing countries are found negative and insignificant when compared to primary and secondary education. Gemmell (1996) finds that the effect of human capital on economic growth is most pronounced at the primary and secondary education levels but at the tertiary level for OECD countries. Education in countries with low levels of human capital and income tends to lead to less productive activities.

Furthermore, the estimation results of the FDI variable show a negative and significant value in driving economic growth. This result is again inconsistent with the recent studies (Ahmed, 2012; De Mello Jr, 1999; Kuo & Yang, 2008) which state that FDI has a positive and significant effect on economic growth. So far, it is felt that FDI has not only boosted the total amount of capital, but has also contributed to improving the quality of that capital (Ajayi, 2006). Too much investment that comes in but cannot be managed properly will have a negative impact on the destination country, and inadequate technology during the production process makes goods must be imported and indirectly will make foreign currencies stronger (Adefabi, 2011). Environmental factors can be one of the causes for the bad presence of foreign companies (Li & Tanna, 2019). When foreign companies dominate the market, the market becomes less efficient which will have a negative impact on investment and growth (Farla, 2014).

The variable of institutional quality shows surprising results where it is positive and has no significant or no influence in driving economic growth. This result is not in accordance with the research by Cooray et al. (2017) and Raza et al. (2019), which shows that institutions have a positive and significant effect, but this research was conducted in OECD countries which in general have very good institutional levels. As a developing country, indicators of institutional quality have a low and unstable value every year so that the effect on economic growth is insignificant.

Political instability or corruption can increase the risk of an incomplete return on investment, but these risks can be reduced with good governance such as rule of law and control of corruption. Slesman et al. (2015) describe institutions of better quality represented by the force of the rule of law, control over corruption and democracy. Institutions can influence not only the inflows of foreign capital but also facilitate the effects of that capital on good firms and the economy.

The next result is the interaction variable *fdi*hc* which represents the spillover of FDI with human capital shows a positive and significant value in driving economic growth in Asian emerging markets. This finding is in line with the endogenous growth model (Romer, 1990) where FDI can also be assumed to indirectly contribute to economic growth through the absorption of a country by increasing the stock of knowledge and the quality of institutions by developing technological growth in the host country. FDI forms a spillover in the form of knowledge to local workers and at the same time the level of human capital in the host country is determined by how much FDI that can be withdrawn and how local companies can absorb the benefits of this technology spillover (Adefabi, 2011).

These results also complement previous research by Li & Tanna (2019), which found negative results between FDI spillovers and secondary education on economic growth. This is because developing countries prefer to improve the quality of institutions rather than secondary education when the FDI spillover occurs. Although previously negative results were found, tertiary education is considered to have been able to become a maximum absorptive capacity in capturing the spillover effect of FDI so that it can play a positive role in driving economic growth.

The final estimation result is the interaction variable *fdi*wgi*, which describes the spillover of FDI with institutional quality shows a positive and significant value in driving economic growth. This finding is in line with research by Bekaert et al. (2011), Kose et al. (2009) and Li & Tanna (2019) which emphasize the importance of the quality of host country institutions in absorbing FDI spillovers so that they can produce higher productivity growth. This indicates that FDI is able to improve the quality of the host country's institutions so that they can boost economic growth.

Robustness Test

Table 3. Estimation Result FEM, PLS, and GMM

	Dependent Variable: lnGDP		
	PLS	FEM	GMM
l.lngdp			0.780***
			(0.035)
lnlabor	-0.001	0.407***	0.013**
	(0.031)	(0.096)	(0.006)
lngfcf	0.815***	0.381***	0.174***
	(0.027)	(0.086)	(0.028)
lnhc	-0.080**	-0.427***	-0.013*
	(0.034)	(0.116)	(0.007)
fdi	-0.256***	-0.145*	-0.057**
	(0.094)	(0.071)	(0.022)
wgi	-0.025	0.035	0.005
	(0.040)	(0.025)	(0.006)
fdi*hc	0.044	-0.045**	0.014**
	(0.028)	(0.014)	(0.006)
fdi*wgi	0.047	0.005	0.011**
	(0.036)	(0.022)	(0.005)
N	80	80	80
Prob>F	0.000	0.000	0.000
R-*square*	0.994	0.971	
AR (1)			0.039
AR (2)			0.597
Sargan test			0.252

Source: Analyzed by STATA 14

Robustness test is performed to check whether the regression results obtained are strong or not. This test will be carried out with several estimation methods on the same variables used in this study. Tests are carried out with fixed effects (FEM), pooled least square (PLS) and Generalize Method of Moments (GMM). The estimation results in table 6 show that the three methods have different results. All variables except *lnlabor* and *fdi*hc* were consistently significant across all models. In addition, the wgi variable is not significant in all models. The form of FDI spillovers with human capital shows insignificant value in the fixed effect model but on GMM is positive and significant.

This makes GMM the most appropriate model in estimating the effect of FDI spillovers in promoting economic growth in emerging markets in Asia. Based on the test that has been carried out,

the authors conclude that the results of the estimates made in this study are correct. The model and the independent variables used have the power to describe the dependent variable.

5. Conclusion

This study aims to analyze the spillover effect of FDI on economic growth in Asian emerging markets. Based on the results of research that has been done previously using the GMM method, it can be concluded that FDI spillovers on human capital and institutional quality are captured through the interaction variable between the two which shows positive and significant results in driving economic growth. This also complements research by Li & Tanna (2019) which states that FDI will work optimally at a high level of human capital and can encourage improvements in the quality of a country's institutions.

The suggestion for the government as a policy maker is that it is expected to improve the quality of human capital and institutions first before attracting FDI into the country. The government must focus on improving the facilities and infrastructure in the field of education so that in the long run it will increase the quality of the labor. In addition, it is necessary to improve the quality of institutions through reforming the bureaucracy, democracy, eradicating corruption and legal regulations in order to attract investors to invest in destination countries.

While the suggestion for further research is that it is hoped be able to investigate more on how the FDI spillovers can driving economic growth and also use other variables that can capture FDI spillovers at a macro level. Researchers are expected to use time series data or by comparing between developed and developing countries to be more focused regardless of the differences in the characteristics of each country and be able to analyze the differences between the two. In addition, analyze the causes of the economic slowdown in the next period and carry out developments in the proxies of human capital which are still being debated today.

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