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Impacts of Foreign Direct Investment on Human Capital in ASEAN

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Abstract

Purpose: Research and development of human capital in countries bring sustainable development to the nations. Especially for developing countries, the attraction of foreign direct investment not only brings economic growth to the country but also contributes to improving human capital. This study aims to assess the impact of foreign direct investment on human capital in ASEAN countries. **Research design, data and methodology:** With data collected from ASEAN countries from 1990 to 2019, panel data analysis is performed with revised model types (the Pooled OLS, Fixed effect model, Random effect model and regression with Driscoll-Kraay standard errors). **Result:** The results of the regression analysis show that FDI has a positive impact on human capital. At the same time, the study also found that public investment in education also positively affects human capital; the life expectancy factor does not affect human capital. **Conclusions:** With this research result, the authors also proposed a number of solutions to improve human capital by attracting FDI and improving the efficiency of investment for the education of ASEAN countries. Besides, public expenditure on education also plays an important role in raising human capital. Therefore, investment in education should be promoted further in the future.

Keywords: Foreign Direct Investment, Human Capital, Investment in Education Distribution

JEL Classification Code: A14, F15, F43

1. Introduction

As international trade and global integration is widespread, companies have been formulating a number of ways to penetrate into the international market one of which

is to invest in a foreign firm (Almfraji & Almsafir, 2014). As a result of this, the world has experienced an increasingly extensive volume of Foreign Direct Investment (FDI) (Almfraji & Almsafir, 2014). Over time, there are different definitions of FDI. Early, FDI is regarded as a comprehensive composite of capital stock and technology that can encourage the domestic economy through employee training, skill and technology diffusion, new managerial and organizational practices (de Mello, 1999). More comprehensively, FDI refers to what a business needs to operate in a foreign market such as capital, management, technology, and entrepreneurship. Placing an emphasis on the long-term involvement dimension, IMF and WB consider FDI as lasting investment interest of companies in oversea enterprises indicated by the ambition to acquire at least 10 percent of voting stock (H. Dunning & M. Lundan, 1993). Along the same lines, Griffin and Pustay (2007) also define FDI to be a proprietorship over 10 percent or more of voting securities.

From an economic perspective, FDI has been regarded

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as a resource for development in receiving countries in many different ways (Ozawa, 1992). First, FDI often leads to increased capital (Vinh, 2019) while most developing countries often encounter capital shortage (Majeed & Ahmad, 2008). Second, FDI creates new job opportunities (Ho et al., 2020). Third, FDI has become a crucial channel for knowledge and technology spillovers (Branstetter, 2006), Findlay (1978) Wang (1990). Technology diffusion by technologically advanced multinational corporations is one among major channels (Borensztein et al., 1998). Therefore, host economies are believed to rely on FDI as a source of productivity gains, new innovative processes, managerial expertise, know-how, employee training, international markets, and market access (Alfaro et al., 2004), which enhances their competitiveness in the global market (Borensztein, Gregorio, & Lee, 1998). Third, FDI may also reduce poverty (Fowowe & Shuaibu, 2014). Given that, policymakers in developing countries have been acting towards the purpose of attracting more FDI (Alfaro, 2003)

One economic aspect of FDI that has drawn tremendous academic attention is the interrelation between inward FDI and human capital of receiving economies. Human capital is defined as knowledge and skills obtained through education and training, also a result of deliberate investment which yields returns (Nafukho et al., 2004). Human capital is an important determinant of not only organization performance (Zula & Chermack, 2007) but also economic growth (Becker, 1992; (Azam et al., 2015). Although generating and improving human capital is a complicated process, there are various methods to do so ranging from formal education, firm-provided training, vocational and technical training to informal on-the-job learning (Machin & Vignoles, 2004).

There exists a multidimensional correlation between FDI and human capital. On the one hand, human capital is a determinant of FDI because firms are likely to make a productive investment in a nation which obtains a greater stock of human capital (Kheng et al., 2017). Obviously, technical training or knowledge transfer can be better implemented at lower expenses if the domestic workforce is skilled and competent enough (Abbas & Mosallamy, 2016). On the other hand, FDI is recognized to enrich human resources in recipient countries through a number of channels including on-the-job training, technology transfer, new skills and practices associated with management and organization (Abbas & Mosallamy, 2016; de Mello, 1999).

However, as it can be seen, hardly has anyone touched upon the Southeast Asia region. In this research, the authors put an emphasis on the impacts of FDI on human capital in developing countries in Southeast Asia for a number of reasons. First, this is one of the most attractive markets for international investors and the leading destinations of MNCs (WB, 2019). Over the last five years, many countries in the region have experienced record levels of inward FDI.

Asia is a major and successful investment of transnational corporations (TNCs) for three decades. In fact, many nations have been significantly relying on FDI to encourage export-led industrialization. Second, they have exploited FDI as an economic growth driver more effectively (Zhang, 2001). Many newly industrializing countries in Southeast Asia such as Indonesia, Malaysia and Thailand have made themselves outward-oriented and managed to take advantage of FDI to facilitate their industrial transformation (Ozawa, 1992). Therefore, there is a definite need to explore the impacts of FDI on human capital development in Southeast Asian countries.

2. Literature Review

Attracting FDI not only promotes the development of the host country economy but also enhances resources in these countries. A number of empirical studies have aimed to explore the world of FDI on human capital.

Gittens & Pilgrim (2013) employs a dynamic panel data to analyses how human capital accumulation is tied to FDI as well as examine the impacts of various economic elements on economic growth in developing countries over the period 1970-2010. In this study, the dependent variable, human capital, is indicated by the average years of tertiary education, school attainment of the population, and the proportion of higher education in the total population aged 15 and above. The study confirms the positive impacts of FDI on human capital. This finding is justified that FDI inflows facilitate domestic technological advances, so contribute to economic progress, thanks to which, human capital accumulation is stimulated.

Yildirim & Tosuner (2014) explore the causal relationship between FDI and human capital represented by education levels of countries in Central Asian Turkic Republics 1999-2011 periods. Panel OLS methodology is adopted. Interestingly, the tie between the two variables is found to be insignificant, or FDI does not promote the education enhancement in those countries. A few justifications for this are provided. First, the statistically insignificant impacts of FDI is attributed to the initial structure of FDI. Second, when FDI does not require high levels of technology competence, it has no impacts on education. The authors propose that the contribution of FDI to education is inconsistent, and MNCs may not be willing to invest in high-tech industries. Third, the human capital threshold is not yet enough to accumulate technology spillovers. In these scenarios, it can be seen that the actual contribution of foreign investors conflicts with the expectations of receiving countries.

Checchi (2007) aims to discover the role of foreign firms in the domestic market in respect to human capital accumulation. The analysis takes into account 112 countries

for secondary enrolment and 108 countries for tertiary education over the period 1985-2000. According to the results, inward FDI stock and secondary education enrolment are negatively correlated. The fact that the authors measure FDI stocks as a whole does not allow differentiation among various types of sectors. Meanwhile, different types of FDI may lead to different investment incentives in education development subject to the skillsets required to conduct their main activities. This negative effect is observed mainly in poor countries in Africa and South Asia probably because FDI in this region weighs on natural resource exploitation more than a local workforce.

3. Method

3.1. Research model

Based on the previous studies described above, especially from the research of Kheng (2017). The research model is presented as follows:

$$HC_{it} = \alpha_0 + \beta_1 FDI_{it} + \beta_2 EDU_{it} + \beta_3 LE_{it} + \epsilon_{it}$$

In which, the variables are described in table 1.

Table 1: Variables description

Variable	Name	Indicator	Reference
Dependent variable	HC	School enrollment, tertiary rates	Kheng(2017); Yildirim & Tosuner (2014)
Independent	FDI	Net inflow of foreign direct investment	Kheng (2017); Yildirim & Tosuner (2014)
Control variables	PEXDU	Public expenditure on education as a percentage of GDP	Kheng (2017)
	LE	Life expectancy at birth	

FDI into countries will increase the economic resources for the host country (Ho et al., 2020). This investment promotes the development of resources in countries. The number of enrollments at high school / university levels increases, the number of qualifications also increases due to the higher market demand, and the economic potential of investing in education become well (Basu & Yao, 2009; Kheng, 2017). Therefore, the research hypothesis is given as follows:

H1: FDI has a positive impact on human capital

At the same time, the factor of public investment in

education brings better facilities for education. This makes the quality of training increase (Kheng, 2017). Therefore, the research hypothesis is given as follows:

H2: PEXDU has a positive impact on human capital

Finally, the average life expectancy of countries represents the development of health infrastructure and high quality of life increase (Kheng, 2017). Therefore, the leader will invest more in education to increase the quality of human capital. Therefore, the research hypothesis is given as follows:

H3: LE has a positive impact on human capital.

3.2. Data

Data was collected on the World Bank from 1990 to 2018 for all countries in ASEAN. The collected data will be encoded and put into STATA 15 software for analysis. The statistical results showed that the average human capital value reached 19.37% of which the largest was 52.25% and the smallest was 0.65%, the standard deviation was 13.40, indicating a large disparity among countries about human capital. Attracting FDI investment into countries reached 3.2 billion USD / year, of which the largest was 251 billion USD and some countries only specialized in outward investment. The mean of life expectancy of ASEAN countries is 67.45 years of which the largest is 76.93 years old and the smallest is 48.49 years old. The results show that the mean of life expectancy in the ASEAN region is high. Finally, the public investment rate for education averages 3.4% of GDP, the largest is 7.6% of GDP and the smallest is 0.7% of GDP. The collected variables are described in detail in Table 2.

Table 2: Summary Statistics

	N	Mean	Min	Max	SD
HC (%)	214	19.373	0.659	52.256	13.405
FDI (\$)	274	3.20e09	-4.55e09	2.51e10	4.71e09
LE(year)	290	67.458	48.492	76.931	6.430
PEXEDU (%)	144	3.438	0.787	7.658	1.442

3.3. Data analysis

Data collected with 10 ASEAN countries from 1990 to 2018 will be analyzed through Pooled OLS, fixed effect model (FEM) and random effect model (REM). The Hausman test will find a model that matches the study data. In addition, multicollinearity testing is used from the outset to consider the reliability of bringing all independent variables together into the model. The model selected

through the Hausman test will be tested for reliability (through autocorrelation test and heteroskedasticity test). In case the model encounters these phenomena, the Regression with Driscoll-Kraay standard errors.

4. Results

4.1. Correlation matrix

The correlation coefficient matrix indicates that the human capital variable is strongly correlated with FDI as well as other independent variables ($r_{HC,FDI} = 0.655$; $r_{HC,PEXEDU} = 0.499$; $r_{HC,LE} = 0.720$). In particular, the independent variables are also correlated with each other (correlation coefficients between the independent variables are greater than 0.3). Therefore, multi-collinearity testing will be performed in detail in the next steps.

Table 3: Correlation Coefficient

	HC	LFDI	PEXEDU	LE
HC	1			
LFDI	0.655*	1		
PEXEDU	0.499*	0.396*	1	
LE	0.720*	0.638*	0.737*	1

Table 5: The result of regression

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	OLS	OLS	FEM	FEM	REM	REM	Driscoll-Kraay standard errors	Driscoll-Kraay standard errors
LFDI	3.690*** (0.497)		3.702*** (0.619)		3.604*** (0.560)		3.702*** (0.836)	
LE		2.083*** (0.257)		3.087*** (0.240)		2.865*** (0.230)		3.087*** (0.318)
PEXEDU	2.560*** (0.657)	-0.602 (0.859)	1.433 (0.958)	0.0856 (0.697)	1.678** (0.843)	-0.314 (0.685)	1.433 (1.648)	0.0856 (0.838)
Constant	-63.83*** (9.911)	-118.9*** (15.77)	-60.10*** (13.82)	-191.1*** (16.53)	-59.55*** (12.08)	-175.0*** (15.67)	-60.10*** (21.19)	-191.1*** (22.89)
Observations	115	118	115	118	115	118	115	118
R-squared	0.497	0.525	0.264	0.614	0.520	0.523	0.264	0.614
Number of groups	10	10	10	10	10	10	10	10

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Multicollinearity tests show that the two variables LE and FDI are closely related. Therefore, these two variables are run in turn in the regression analysis

Table 4: Multicollinearity test

Variable	VIF
LE	230.79
LFDI	205.43
PEXEDU	9.08

4.2. Result of regression

The analytical results indicate that the REM model is consistent with the study data (p-value of Hausman test >0.05), but encountered autocorrelation. Therefore, the calibration model is implemented with the xtsc statement in STATA. Regression analysis results show that FDI has a positive effect on human capital (beta is positive and p-value is less than 0.05). This result indicates that attracting FDI into countries will increase the quality of human resources of the host country. The positive impacts of FDI on human capital enhancement have been observed in different areas worldwide from a country perspective to a continent scale. In respect to ASEAN region, there are a few possible justifications for this phenomena.

First, in order to attract FDI, ASEAN countries themselves have been leveraging their labor quality. From a national strategic perspective, ASEAN nations position FDI as a major driver of development (Hoang & Bui, 2015) and are well aware that their competitive edge weighs heavily on human resource capabilities (Yusoff, 2002). Unlike the far-gone scenario where ASEAN nations could rely on cheap labor to earn investment (Bello, 2010), the intensive regional and global integration requires them to supply skilled professionals and workers (Majeed & Ahmad, 2008). Transnational and multinational corporations are attempted to relocate their technology-intensive plants to host economies with high quality labor force (UNCTAD, 2000). Therefore, it is of paramount importance to invest appropriately in human capital development through education and professional training (Yusoff & Ismail, 2002).

Second, the presence of foreign-invested firms increases the competitiveness in the domestic labor market as they often offer higher rates to attract high quality employees (Gorg & Greenaway, 2004; Khalifah & Adam, 2009; Casson, 1987). Consequently, the information about foreign firms' strategies and techniques can be diffused to the domestic enterprises, thanks to the labor mobility among firms (Spencer, 2008). At the same time, under the heavy pressure and competition, local firms have hardly any way to survive but to update their manufacturing technologies, increase productivity as well as improve their labor quality through internal or outsourced training channels (Spencer, 2008).

Third, it is undeniable that foreign-owned and foreign-invested enterprises, especially multinational corporations function as a significant contributor to human resource development in host countries (Debrah et al., 2000). Multinational corporations with a reference to East and Southeast Asia not only provide short-term training but also introduce long-term human resource development practices (Bartlett et al., 2002). Besides, the existence of foreign firms enables local businesses to observe and imitate new organizational practices and strategies such as manufacturing technologies, marketing strategies, inventory methods, and employee motivation procedure (Blomstrom, 1998).

5. Conclusion

Through the regression analysis technique of panel data, research shows that FDI and public investment in education have a positive effect on human capital. From the results of this study, the authors have made some recommendations to help raise human capital, which as follows: The role of FDI in ASEAN countries has been clearly demonstrated through

this study. Therefore, countries need to strengthen activities to attract FDI. Besides, public expenditure on education also plays an important role in raising human capital. Therefore, investment in education should be promoted further in the future.

The results of this study have demonstrated the important role of FDI not only in economic growth but also contributes to the development of human capital of ASEAN countries. With mainly developing countries, the important role of FDI is shown more and more. Therefore, this study also helps policy-makers to come up with better policies on FDI as well as more investment in education. These policies will help countries develop in the long term.

Besides the results, the study also has some limitations regarding the number of countries. Therefore, the research method used in the article cannot use analytical techniques when there is endogeneity in the model (a small number of countries leading to use of instruments in endogenous calibration models is not possible). Therefore, in the subsequent studies, it is possible to perform analysis with ASEAN countries running separately by countries to compare and to overcome the case of a limited number of countries when using endogenous adjustment.

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