

# An Economic Effect Analysis of ASEAN FTA on FDI Flows into the ASEAN Countries\*

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Received: December 24, 2015. Revised: December 30, 2015. Accepted: January 15, 2016.

## Abstract

**Purpose** – Considering industrialization development stages, an economic effect of ASEAN free trade agreement (FTA) on foreign direct investment (FDI) flows into the ASEAN countries was analyzed.

**Research design, data, and methodology** – utilizing macro-level panel data from 2001 to 2012, panel regression analysis was conducted with a model constructed based on the knowledge-capital model.

**Results** – As for overall ASEAN countries, ASEAN FTA was positively effective to attract vertical FDI to this region, while horizontal FDI was dominant before ASEAN FTA. Meanwhile, for the diversified economy relevant to Singapore, ASEAN FTA was not effective to attract FDI. For the ongoing industrialization economy relevant to Thailand, Malaysia, and the Philippines, ASEAN FTA was negatively effective to attract FDI; ASEAN FTA became a strong incentive to replace foreign investments with trade transactions for the horizontal firms, but an influence of market potentials after ASEAN FTA, which induces to third-country effects such as export platform FDI, has increased. For the incipient industrialization economy relevant to Indonesia, Vietnam, and Cambodia, ASEAN FTA was positively effective to attract vertical FDI.

**Conclusions** – The effectiveness of FTA on FDI inflows varied considerably by the industrialization development stages of host countries.

**Keywords:** ASEAN FTA, Horizontal FDI, Vertical FDI, Export Platform FDI, Industrialization Development Stages.

**JEL Classifications:** C33, F21, F36, F62, F63.

## 1. Introduction

After the 21st century, the complexion of Free Trade Agreement (FTA) tends to endeavor to form economic blocs compared to the 20th century. In the 20th century, when GATT and WTO systems were established, FTA usually pursued to eliminate tariff and non-tariff barriers between more than two countries that have common economic interests, but after the 21st century, Regional Trade Agreement (RTA) seeking not only economic motivation but also political motivation became more prominent in the world economy. Trans-Pacific Partnership (TPP) settlement, where the United States takes the initiative, and Regional Comprehensive Economic Partnership (RCEP) settlement, where China plays a leading role, can be the recent major examples of RTA, which endeavor to promote political and economic blocs. Meanwhile, Korea, Japan, Australia, New Zealand, and ASEAN member countries are other major economies which deliberate to join in both of the RTAs, and as a production base, the role of ASEAN continues to be considered.

As of 2015, ASEAN has externally endeavored to enhance the efficiency by tariff reduction through the FTA with neighboring six countries: Korea, China, Japan, India, Australia, and New Zealand, and has internally sought for integration into the global economy surpassing regional economic integration through the transformation into a single market based on manufactured products, a highly competitive economic region, and a region of equitable economic development (ASEAN, 2008). ASEAN has planned concretely to construct “a single market and production base” through the ASEAN Economic Community (AEC) and has endeavored to seek for the investment promotion and liberalization between ASEAN countries through establishing ASEAN Comprehensive Investment Area (ACIA). These ASEAN's efforts for the efficiency and productivity reflects the rise in intra-regional trade and investment over time in this region, which aims to achieve a position as a representative production networks and clusters in Asia (Lee & Roland-Holst, 1998).

Therefore, in this momentous time of the rise of economic bloc through RTAs in the world economy, it is thought to be meaningful not only to evaluate ASEAN's efforts to promote investment until now but also to deliberate the role of ASEAN for

\* This article was reorganized from a part of the author's doctoral dissertation.

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the sustainable economic growth of the world. This article aims to analyse an economic effect of ASEAN FTA on foreign direct investment (FDI) flows into the ASEAN and to suggest policy implications related to the influences on partner countries or corporations which have joined with ASEAN countries.

The remainder of this article is organized as follows. In Section 2, previous theoretical and empirical studies related to FDI incentives and flows are reviewed. Section 3 provides an econometric model and expected hypotheses for the effect of ASEAN FTA on FDI flows. Section 4 presents empirical results from the regression analysis and investigates how ASEAN FTA influenced on FDI flows. Section 5 discusses the international economic implications of ASEAN FTA and offers concluding remarks.

## 2. Theoretical Background and Previous Empirical Studies

### 2.1. Theoretical Background of FTA effects on FDI

Foreign Direct Investment (FDI) is defined as investment by a resident entity in one economy that reflects the objective of obtaining a lasting interest in an enterprise resident in another economy (OECD, 2011). FDI can be considered theoretically with "horizontal FDI" and "vertical FDI", which is categorized according to types of affiliate and investment motives. Horizontal FDI refers to the foreign manufacturing of products and services roughly similar to those that the firm produces in its home market (Markusen, 2002). This form of FDI is distinguished from vertical FDI; vertical investments refer to those that geographically fragment the production process by stages of production, by which some stages of production are performed in the host countries while others are performed in the parent country (Reinert et al., 2009).

Standard horizontal FDI models resolve around the trade-off between plant-level fixed costs and trade costs (Markusen, 1984). Multinational corporations (MNCs) usually utilize this form of FDI to enter overseas market and to dissolve trade barrier. If production base is located in one place in a parent country and the parent companies export their products to other countries, the parent companies take advantage of economies of scale, but should cover the variable cost. On the contrary to this case, if production bases are located in various places in a host country, there are demerits that not only parent companies are hard to derive benefits by economies of scale but they have to also shoulder higher fixed costs which are more expensive than their motherland situations. By considering these various cases, parent companies try to pursue to effect economies of scale by producing the same products in a host country. Therefore, this form of horizontal FDI is generally considered as a substitute relation with transactions in trade.

Unlike horizontal FDI, with vertical FDI, firms establish manufacturing facilities in multiple countries, each producing a differ-

ent input to, or stage of, the firm's production process (Christiansen, 2014). Vertical FDI is distinguished from horizontal FDI with investment motives; in horizontal FDI models, how to serve the host market appropriately is the best concern, but in vertical models, how to serve domestic market is the priority concern. In particular, Helpman (1984) showed that the establishment of a new plant requires additional fixed costs but saves the costs associated with trade impediments in case of the vertical FDI; thus, standard vertical FDI models involve deciding where production base should be located to minimize costs. Therefore, this form of vertical FDI is generally considered as a complementary relation with transactions in trade.

Furthermore, Blomström & Kokko (1997) attempted to deal with the investment effects of regional integration agreements and to analyze how such arrangements may affect inward and outward FDI flows in the integrating region. Major investment motives of horizontal FDI are to capture market and to evade trade barriers. However, FTA induces to reduce trade transaction costs and thus make reduce the cost gap between the export transactions and the production and sales in a host country. Therefore, because initial fixed costs in a host country become relatively increased, the firms replace foreign investments with trade transactions, and finally horizontal foreign investments will be decreased due to the FTA. Meanwhile, a major investment motive of vertical FDI is to utilize a comparative advantage of factor endowments for manufacturing products in a host country. However, trade barriers imposes a burden on MNCs. Therefore, FTA induces to decrease not only transaction cost for dealing with raw and intermediary goods, but also production cost by way of the division of labor with foreign branches. And finally, FTA becomes to promote vertical foreign investments.

However, Blomström et al. (2000) noted main goals of FTA, i.e., the changes of the international trade environment and economic system as well as the elimination of trade barriers through tariff removal. They argued that FTA will contribute to increase in FDI regardless of types of affiliate and investment motives. FTA influences directly and indirectly on the increase in FDI. As a direct influence of FTA, FDI can be increased because regulations relative to investments and capital movements will be alleviated after concluding FTA. And as an indirect influence of FTA, it is noted that economic environments are changed after concluding FTA; FTA induces to realize the economy of scale as well as influences on the change of ratio in the factor endowments for manufacturing products. Therefore, not only does vertical FDI have complement relationship with trade transactions, it is possible that horizontal FDI can be also increased after FTA is in effect.

In addition, an integrated treatment of horizontal direct investment and vertical direct investment was developed in the knowledge-capital model (Markusen et al., 1996; Markusen, 2002). This unified horizontal and vertical investment model reflects the reality that it is hard to separate distinctively FDI activities with horizontal motivation and vertical motivation. This model is usually based on the following assumptions relating to knowledge-based assets; that is, transportability, skilled-labor intensity,

and jointness in multiple locations are the major considerations in the knowledge-capital model. MNCs naturally endeavor to find foreign production facilities with abundant skilled labor pool and to yield their full productivity in multiple locations at the same time, which are to use their knowledge-based assets more efficiently. The former property supports vertical firms, while the latter supports horizontal multiplant firms.

## 2.2. Previous Empirical Studies of Economic Effects of FTA on FDI

Major empirical studies related to FDI activities are focused on trade and macroeconomic perspectives rather than international business approach. In a view of trade theory, Heckscher-Ohlin theorem suggests a fundamental hypothesis of capital flows (Johnson, 1957); due to the different factor endowments between trading countries, capital-intensified goods tend to be exported from capital-abundant countries to capital-scarce but labor-abundant countries. In addition, macroeconomic analyses have been usually conducted with aggregate capital and trade data reflecting the difficult reality in modeling with diverse structures of individual firms. Therefore, most of the previous researches related to FDI have not only focused on advanced economies which have capital-intensive industries but also have been usually conducted with macro-level data.

Previous FDI researches have usually supported that horizontal FDI is dominant rather than vertical FDI. Brainard (1993, 1997) reported that foreign affiliates belonged to U.S. MNCs exported only 13 percent of their overseas products back to the United States, and U.S. affiliates owned by foreign firms exported only 2-8 percent of U.S. products back to their parent countries, while 64 percent was sold in the U.S. market. Lipsey (1999) suggested that large market size attracted U.S. firms oriented to local sales, while for the export-oriented firms, market size was not important. Ramondo et al. (2014) found that the majority of affiliates are horizontal, and vertical affiliates which engage in intrafirm trade are concentrated among a small number of large U.S. multinational corporations.

The major concern of vertical FDI is where to construct production bases to minimize costs. Aizenman & Marion (2004) found that uncertainty about predatory actions, volatility, and sovereign risk of host countries have a greater negative influence on vertical FDI than on horizontal FDI. Braconier et al. (2005) found that more vertical FDI is conducted in countries with less-skilled and cheap labor pool, and horizontal FDI attributes to skilled-wage cost premia. Fukao & Wei (2008) found that in case of Japanese foreign affiliates, labor costs had a great influence on vertical FDI, while a large market was the most important location determinant for horizontal FDI.

These horizontal and vertical FDI incentives of foreign affiliates can be stimulated or cannot be affected so much by FTA according to economic situations of host countries (Moon & Yoon, 2011). Yeyati et al. (2003) found that the increase in size of the market associated with regional integration initiatives, more different factor proportions compared to the source coun-

try, and more openness (or dependence upon trade) raise FTA effectiveness on FDI greatly. In other words, FTA or bilateral investment treaty (BIT) can be just ancillary roles for enhancing FDI in host countries (Kim, 1998). Jang (2011) showed that FDI between developed countries have a negative correlation with FTA; similar factor proportions and lower dependence on trade between developed countries hindered vertical FDI and the market of developed countries was the cause of horizontal FDI, but FTA reduced the variable costs for trade, which induced to reduce FDI between developed countries. UNCTAD (1998) suggested that general effects of BIT on FDI flows into host countries are not significant, but only in case of underdeveloped countries, BIT effect shows comparatively positive to FDI inflows; as determinant factors of FDI inflows, market size and market growth rate are more crucial, and BIT itself has a supporting role to construct fair and predictable investment-related institutions bilaterally.

However, previous empirical studies about FTA (or BIT) effect on FDI generally suggested that there is a positive relationship between FTA (or BIT) and FDI. Egger & Pfaffermayr (2004) showed that bilateral investment treaties exert a significant positive effect on outward FDI utilizing OECD 19 countries and 54 partner countries data. Leshner & Miroudot (2006) showed that the combination of RTA and BIT jointly influenced on trade and investment more significantly. When it comes to NAFTA, FTA had a significant positive effect on FDI flows; especially NAFTA's effect on FDI flows into Mexico was much larger than its effect on FDI flows into the U.S. (Cuevas et al., 2005).

As far as the issue of ASEAN FDI flows is concerned, it is notable that ASEAN's efforts to raise productivity and efficiency have been systematized, e.g., AEC and ACIA were introduced in chapter 1, while investment flows into ASEAN kept on increasing and became more diversified. However, Urata & Ando (2011) pointed out the need for further liberalization of FDI policies and promotion of facilitation measures for ASEAN countries, and demanded ASEAN to utilize various existing frameworks such as FTAs, BITs, and ACIA. In addition, Utama (2005) found that activities of MNCs in ASEAN from 1983-2003 had been generally shown as horizontal characteristics, while recent types of FDI in ASEAN were considered with more various ways, i.e. from horizontal and vertical FDI to export platform and complex vertical FDI (Utama & Peridy, 2009); export platform and complex vertical FDI are usually motivated by a desire of MNCs for both capturing a larger market and utilizing a comparative advantage of factor endowments after RTAs, which make internal trade barriers lower but external barriers higher, are in effect, and Motta & Norman (1996) found that improved market access within a trade block lead to third-country effects. Finally, with respect to studies for the effectiveness of FTA, Thangavelu & Findlay (2011) showed that there is a positive relationship between participation in multilateral trade agreements and FDI flows into the Asia-Pacific region. Moreover, various evaluation studies for the effectiveness of bilateral FTAs in Asia have been suggested continuously (Plummer, 2007; Urata & Sasuya, 2007).

### 2.3. Differentiation from Preceding Researches

The present study aims to show how much ASEAN FTA impacted on FDI flows. Most previous studies related to foreign investment in the world economy tend to be based on specific developed countries which have affluent capital, while in case of economic studies of ASEAN FTA effect on FDI, empirical analyses with aggregate data of ASEAN have been usually conducted and in-depth investigations on sectoral barriers to foreign investment flows into ASEAN have been suggested to promote a better investment climate in ASEAN community.

However, it needs to be considered that the economic structures are diverse among ASEAN countries, which differentiates from the EU or NAFTA with comparatively similar economic structure. In a regional concept, it is true that ASEAN community has common economic attributes which induce to increase the investment inflow such as manufacturing base with abundant labor pool and emerging market, following China and India as representative emerging countries in the world economy. Nonetheless, it should not be overlooked that ASEAN includes ten countries with various investment atmospheres in micro and macro perspectives; for example, ASEAN member countries show various business atmospheres and income levels from a developed country to least developed countries. Therefore, it is thought to be useful if an evaluation study for effectiveness of ASEAN FTA on FDI flows is suggested reflecting industrial development stages of each ASEAN countries.

## 3. Conceptual Framework and Hypothesis

### 3.1. Main regression

In compliance with preceding theoretical and empirical studies suggested above, this research mainly referred to Egger & Pfaffermayr (2004), Utama & Peridy (2009), and Jang (2011) in setting up the key regression model. Egger & Pfaffermayr (2004) showed an empirical analysis how specific economic characteristics such as economic size, relative factor endowments differences, trade transaction costs, and interaction terms between these variables influenced on FDI applying the knowledge-capital model. Utama & Peridy (2009) endeavored to investigate the current FDI patterns in ASEAN using an applied knowledge-capital model which include third-country effects. Jang (2011) also adopted the know-capital model to the empirical analysis for an effectiveness of FTA on FDI among developed countries. Therefore, the present study followed the major previous empirical researches, and the regression model was constructed based on the knowledge-capital model as following.

$$\ln(\text{FDI}_{ijt}) = \beta_0 + \beta_1 \text{HGDP}_{it} + \beta_2 \text{SIM}_{ijt} + \beta_3 |\Delta \text{SK}_{ijt}| + \beta_4 \text{MP}_{it} + \beta_5 \text{OPEN}_{it} + \beta_6 \text{HGDP}_{it} |\Delta \text{SK}_{ijt}| + \beta_7 |\Delta \text{SK}_{ijt}| \text{DIST}_{ij} + \beta_8 \text{FTA}_{ijt} + \beta_9 \text{FTA}_{ijt} \text{Dist}_{ij} + \beta_{10} \text{FTA}_{ijt} |\Delta \text{SK}_{ijt}| + \beta_{11} \text{FTA}_{ijt} \text{MP}_{it} + \beta_{12} \text{BIT}_{ijt} + \beta_{13} \text{BiFTA}_{ijt} + \mu_{ij} + \varepsilon_{ijt} \quad (1)$$

The dependent variable  $\text{FDI}_{ijt}$  is inward FDI stock into host country  $i$  from parent country  $j$  at the year of  $t$ . Thus,  $\ln(\text{FDI}_{ijt})$  is log of inward FDI stock of each ASEAN countries from partner countries.

As for the independent variables,  $\text{HGDP}_{it}$  is the economic size of the host countries,  $\text{SIM}_{ijt}$  is bilateral similarity in economic size between host  $i$  and parent  $j$  in year  $t$ .  $|\Delta \text{SK}_{ijt}|$  and  $\text{MP}_{it}$  represent relative factor endowments differences and market potentials, respectively.  $\text{OPEN}_{it}$  and  $\text{DIST}_{ij}$  represent trade openness of host country  $i$  in year  $t$  and geographical distance between  $i$  and  $j$ , respectively.  $\text{FTA}_{ijt}$  is dummy variable which represents whether ASEAN FTA is effect between  $i$  and  $j$  countries in year  $t$ , while  $\text{BIT}_{ijt}$  is also dummy variable which represents whether BIT comes into effect between  $i$  and  $j$  countries in year  $t$ .  $\text{BiFTA}_{ijt}$  is a dummy variable which represents whether bilateral FTA is in effect between  $i$  and  $j$  countries in year  $t$ .  $\mu_{ij}$  is the country-pair fixed effects.

This set of bilateral determinants was calculated as following:  $\text{HGDP}_{it} = \ln(\text{GDP}_{it})$  measures the economic size of ASEAN host countries.  $\text{SIM}_{ijt} = \ln\{1 - (\text{GDP}_{jt}/(\text{GDP}_{it} + \text{GDP}_{jt}))^2 - (\text{GDP}_{it}/(\text{GDP}_{it} + \text{GDP}_{jt}))^2\}$  captures the bilateral similarities in economic size between ASEAN host countries and parent countries of the world in year  $t$ .  $|\Delta \text{SK}_{ijt}| = |\ln(\text{percapita GDP}_{jt}) - \ln(\text{percapita GDP}_{it})|$  reflects the production cost difference between countries.  $\text{MP}_{it} = \ln \text{GDP}_{it} - \ln \text{TARIFF}_{ijt}$  is the ratio of GDP to tariffs as a proxy variable for market potentials, which implies the rise to an increase in market potentials of ASEAN countries by an reduction in tariffs after an economic integration.  $\text{OPEN}_{it} = \ln\{(\text{Export}_{it} + \text{Import}_{it})/\text{GDP}_{it}\}$  denotes trade openness of ASEAN countries  $i$  in year  $t$ .

### 3.2. Expected Hypothesis for Economic Effects of FTA on FDI inflows

Expected signs of the theoretical model are summarized in <Table 1>. Specific hypotheses for this analysis were suggested as follows.

- <Hypothesis 1> Economic size is positively associated with horizontal and export platform FDI flows.
- <Hypothesis 2> Economic similarity is positively associated with horizontal and export platform FDI flows.
- <Hypothesis 3> Relative factor endowments differences are positively associated with vertical FDI flows.
- <Hypothesis 4> The relationship between the market potentials and the horizontal, export platform, and vertical FDI can not be determined.

Economic size of host countries ( $\text{HGDP}_{it}$ ) is expected to have positive relationship with horizontal and export platform FDI flows into ASEAN; increased size of economy offers MNCs from parent countries positive incentives to capture the host country markets. Bilateral similarity in economic size ( $\text{SIM}_{ijt}$ ) is expected to have positive relationship with horizontal and export platform

FDI flows into the ASEAN countries; similar market size between parent and host countries is more likely to induce MNCs to construct production bases in a host country to capture the market, but vertical firms will react negatively at the similar productivity of the host country compared to the parent country. Relative factor endowments measured by the difference for the GDP per capita between parent and host countries ( $|\Delta SK_{ijt}|$ ) are expected to have positive relationship with vertical FDI flows into the ASEAN countries, while the effect of an increase of relative factor endowments on horizontal FDI flows will be negative because major factor of an increase of relative factor endowments can be not only increase of GDP per capita of parent countries but also decrease of GDP per capita of host countries; if GDP per capita of host countries decreases relatively, horizontal FDI flows which are sensitive to marketability are affected to be decreased. In addition, if relative factor endowments are decreased due to the rise of productivity in host countries, the effect of a decrease of relative factor endowments can be a rather opportunity to let horizontal firms to invest in the host country for securing the market. However, it is hard to determine the incentives of export platform FDI consistently in this case of relative factor endowments. The relationship between market potentials ( $MP_{it}$ ) and FDI flows would be undetermined; If an increased factor of the market potentials relies on an increase of GDP in a host country, there is positive relationship with horizontal FDI and there will be less impact on vertical FDI, but if an increased factor of market potentials relies on a decrease of transaction cost such as tariffs in a host country, there is negative relationship with horizontal FDI and there will be an incentive to increase vertical FDI. Trade openness ( $OPEN_{it}$ ) is expected to have positive relationship with horizontal, export platformed, and vertical FDI; economic atmosphere of a host country where is favorable to market-opening provides encouragement for MNCs to invest their knowledge-based assets in the host country.

With regard to FTA and the interaction terms of FTA and other major variables, the expected hypotheses are regarded as follows.

<Hypothesis 5> FTA is positively associated with both vertical and export platform FDI.

At first, the effect of FTA on FDI flows into a host country is different according to types of investment and economic situations of the host country. The effect of FTA on vertical FDI flows is expected to show positive sign; due to the reduction of transaction costs through tariff removal, vertical firms have more incentives to invest their assets in the host country. Meanwhile, the effect of FTA on horizontal FDI flows will be negative; the horizontal firms replace foreign investments with trade transactions because of the relatively increased initial fixed costs in the host country after the FTA. However, in a long term perspective, if considering more fundamental role of FTA to change the international trade environment and economic system in a host country, FTA can induce to raise horizontal FDI flows into the host country.

For the interaction term of FTA and distance ( $FTA_{ijt}Dist_{ij}$ ), it is expected to show negative relationship with vertical FDI; in a situation that tariffs are reduced after FTA, influence on distance will be increased negatively to vertical firms. Meanwhile, the relationship between interaction term ( $FTA_{ijt}Dist_{ij}$ ) and horizontal FDI is expected to show the positive sign; after FTA comes into effect, as the distance between parent and host countries becomes greater, horizontal firms will be more motivated to increase investment into the host country.

In addition, the interaction term of FTA and skill difference between host and parent countries ( $FTA_{ijt}|\Delta SK_{ijt}|$ ) is expected to show positive relationship with vertical FDI; in case that FTA comes into effect, vertical firms will be more motivated to take advantage of a comparative advantage of factor endowments. However, the relationship between this interaction term ( $FTA_{ijt}|\Delta SK_{ijt}|$ ) and horizontal FDI is expected to show the negative sign; an increase of relative factor endowments after FTA will give more negative effect on horizontal firms.

<Hypothesis 5a> Market potentials of a host country with FTA are negatively associated with horizontal FDI but positively associated with export platform FDI.

Finally, the relationship between the interaction term ( $FTA_{ijt}MP_{it}$ ) and horizontal FDI is expected to show the negative sign. The reduction of tariffs representing decreased transaction cost after FTA induces to increase the initial fixed cost in the host country relatively. Therefore, as market potentials are increased due to the reduction of tariffs after FTA comes into effect, horizontal firms will be more motivated to replace foreign investments with trade transactions. However, the relationship between the interaction term ( $FTA_{ijt}MP_{it}$ ) and the export platform FDI is expected to show the positive sign; the reduction of tariffs representing decreased transaction cost after FTA also induce to enlarge the market potentials of the host country relatively so that MNCs based on export platform FDI can be more motivated to increase their investment into the host country.

<Table 1> Expected Signs of the Theoretical Model

Independent Variables	Horizontal FDI	Vertical FDI	Export Platform FDI
HGDP <sub>it</sub>	+	0	+
SIM <sub>ijt</sub>	+	-	+
$ \Delta SK_{ijt} $	-	+	+/-
MP <sub>it</sub>	+/-	+/-	+/-
OPEN <sub>it</sub>	+	+	+
HGDP <sub>it</sub> $ \Delta SK_{ijt} $	+/-	+/-	+/-
$ \Delta SK_{ijt} DIST_{ij}$	+	-	+
FTA <sub>ijt</sub>	+/-	+	+
FTA <sub>ijt</sub> Dist <sub>ij</sub>	+	-	+
FTA <sub>ijt</sub> $ \Delta SK_{ijt} $	-	+	+
FTA <sub>ijt</sub> MP <sub>it</sub>	-	0	+
BIT <sub>ijt</sub>	+	+	+

### 3.3. Data Sources and Descriptive Statistics

Data sources which were used for the empirical analysis in the present study were summarized in <Table 2>. Bilateral FDI data was utilized with country-level value of inward FDI stocks from parent countries to host ASEAN countries. Macro economic variables were transformed from nominal into real values. Laos, Myanmar, and Brunei were excluded in this empirical analysis; there were a lot of missing data for bilateral FDI flows, gross domestic product, and tariff information.

Descriptive statistics for key variables were summarized in <Table 3>. The samples were divided with three groups based on the industrial development stages of ASEAN countries: full sample, diversified economy, ongoing industrialization economy, and incipient industrialization economy. There was something notable in the statistics, i.e., the mean of skill difference in a diversified economy present 0.77, which is much lower than 2.22 in ongoing industrialization economies and 2.88 in incipient industrialization economies. It is thought that the smaller average value of skill difference in the diversified economy compared to the other groups in ASEAN supports the fundamental hypothesis in the Heckscher-Ohlin theorem, as suggested in Section 2, and reflects the reality of the world FDI flows, i.e., foreign investment tends to be transferred from capital-abundant countries to other capital-abundant or labor-abundant countries with the purpose of greater market access or reducing production costs; Jang (2011) also pointed out the relatively small average value for the skill difference of the intra-OECD country pair, which was similar to the values obtained by Egger & Pfaffermayr (2004). In addition, this differentiation in skill difference of the diversified economy compared to the other groups in ASEAN suggests that economic effects of ASEAN FTA on FDI flows may be diverse even among the ASEAN member countries.

<Table 2> Data Sources

Variable	Source
Bilateral FDI (instock US\$)	UNCTAD, Bilateral FDI Statistics 2014
GDP (Current US\$)	World Bank Open Database
Per capita GDP (Current US\$)	World Bank Open Database
GDP deflator (%)	World Bank Open Database
Trade openness	World Bank Open Database
Bilateral tariff information (MFN Weight Average)	World Bank: World Integrated Tariff Solution
Foreign Trade Agreement	WTO, RTA Data Base
Bilateral Investment Treaty	UNCTAD, International investment Agreements Navigator
Bilateral Distance (kilometer)	Time and Date AS ( <a href="http://www.timeanddate.com">http://www.timeanddate.com</a> )

<Table 3> Descriptive Statistics for the Key Variables

Variable	Mean	SD	Min	Max	Skew	Kurt	Med
Full Sample (2,916 obs.)							
InFDlinflows <sub>ijt</sub>	13.68	2.54	7.90	19.94	-0.5	2.32	13.75
HGDP <sub>it</sub>	20.74	1.27	17.63	22.21	-1.29	3.49	21.14
SIM <sub>ijt</sub>	-1.89	1.25	-7.16	-0.69	-1.35	4.62	-1.50
ΔSK <sub>ijt</sub>	2.32	1.34	0.00	5.19	-0.15	1.89	2.46
MP <sub>it</sub>	19.83	2.82	14.11	34.33	1.01	5.35	19.74
OPEN <sub>it</sub>	4.82	0.61	3.82	6.09	0.43	2.65	4.83
Distance <sub>ij</sub>	8.73	0.82	5.75	9.87	-1.33	4.39	9.03
Tariff <sub>ijt</sub>	0.93	2.23	-13.65	5.58	-2.46	9.68	1.59
HGDP <sub>it</sub>  ΔSK <sub>ijt</sub>	47.50	26.61	0.01	95.72	-0.30	1.80	52.05
ΔSK <sub>ijt</sub>  DIST <sub>ij</sub>	20.45	12.27	0.00	47.62	-0.05	1.87	21.42
FTA <sub>ijt</sub>	0.19	0.40	0.00	1.00	1.54	3.38	0.00
FTA <sub>ijt</sub> Dist <sub>ij</sub>	1.47	3.00	0.00	9.18	1.59	3.60	0.00
FTA <sub>ijt</sub>  ΔSK <sub>ijt</sub>	0.33	0.85	0.00	4.35	2.78	10.16	0.00
FTA <sub>ijt</sub> MP <sub>it</sub>	4.05	8.03	0.00	30.50	1.54	3.54	0.00
BIT <sub>ijt</sub>	0.39	0.49	0.00	1.00	0.46	1.21	0.00
BiFTA <sub>ijt</sub>	0.05	0.22	0.00	1.00	4.18	18.44	0.00
Diversified Economy (420 obs.)							
InFDlinflows <sub>ijt</sub>	13.30	2.15	8.44	18.04	0.22	2.57	13.19
HGDP <sub>it</sub>	21.14	0.34	20.64	21.67	0.07	1.72	21.17
SIM <sub>ijt</sub>	-1.49	0.79	-4.16	-0.69	-1.02	3.48	-1.26
ΔSK <sub>ijt</sub>	0.77	0.95	0.00	3.99	1.73	5.05	0.37
MP <sub>it</sub>	25.16	2.57	18.63	34.33	0.64	3.87	24.72
OPEN <sub>it</sub>	5.96	0.07	5.87	6.09	0.36	1.75	5.94
Distance <sub>ij</sub>	8.83	0.85	5.75	9.84	-1.83	6.54	9.18
Tariff <sub>ijt</sub>	-4.04	2.61	-13.65	2.13	-0.62	3.77	-3.71
HGDP <sub>it</sub>  ΔSK <sub>ijt</sub>	16.19	20.05	0.01	86.55	1.73	5.08	7.72
ΔSK <sub>ijt</sub>  DIST <sub>ij</sub>	6.36	7.48	0.00	33.26	1.72	5.27	3.36
FTA <sub>ijt</sub>	0.15	0.36	0.00	1.00	1.91	4.64	0.00
FTA <sub>ijt</sub> Dist <sub>ij</sub>	1.16	2.74	0.00	9.05	2.00	5.18	0.00
FTA <sub>ijt</sub>  ΔSK <sub>ijt</sub>	0.30	0.84	0.00	3.99	2.69	8.94	0.00
FTA <sub>ijt</sub> MP <sub>it</sub>	4.36	9.31	0.00	28.50	1.68	3.85	0.00
BIT <sub>ijt</sub>	0.29	0.45	0.00	1.00	0.94	1.88	0.00
BiFTA <sub>ijt</sub>	0.21	0.41	0.00	1.00	1.43	3.04	0.00
Ongoing Industrialization Economies (1,152 obs.)							
InFDlinflows <sub>ijt</sub>	14.33	2.52	8.36	19.94	-0.11	2.22	14.44
HGDP <sub>it</sub>	21.21	0.34	20.63	21.79	-0.04	2.04	21.19
SIM <sub>ijt</sub>	-1.56	0.92	-5.53	-0.69	-1.38	5.15	-1.22
ΔSK <sub>ijt</sub>	2.22	0.98	0.01	4.22	-0.38	2.33	2.37
MP <sub>it</sub>	19.86	1.15	15.59	28.01	2.24	11.71	19.70
OPEN <sub>it</sub>	4.79	0.32	4.17	5.35	-0.38	2.35	4.84
Distance <sub>ij</sub>	8.65	0.87	5.75	9.77	-1.28	4.05	9.02

Tariff <sub>ijt</sub>	1.35	1.09	-7.05	5.58	-2.35	13.33	1.51
HGDP <sub>it</sub>   $\Delta$ SK <sub>ijt</sub>	46.98	20.58	0.19	87.24	-0.43	2.35	50.60
$\Delta$ SK <sub>ijt</sub>  DIST <sub>ij</sub>	19.57	9.35	0.07	40.18	-0.21	2.20	20.78
FTA <sub>ijt</sub>	0.22	0.41	0.00	1.00	1.35	2.82	0.00
FTA <sub>ijt</sub>  Dist <sub>ij</sub>	1.65	3.13	0.00	9.18	1.40	3.03	0.00
FTA <sub>ijt</sub>   $\Delta$ SK <sub>ijt</sub>	0.31	0.71	0.00	3.31	2.43	8.10	0.00
FTA <sub>ijt</sub>  MP <sub>it</sub>	4.51	8.37	0.00	28.01	1.33	2.82	0.00
BIT <sub>ijt</sub>	0.44	0.50	0.00	1.00	0.26	1.07	0.00
BiFTA <sub>ijt</sub>	0.04	0.20	0.00	1.00	4.70	23.09	0.00
Incipient Industrialization Economies (1,344 obs.)							
InFDIinflows <sub>ijt</sub>	13.08	2.58	7.90	19.32	-0.11	2.17	13.46
HGDP <sub>it</sub>	20.21	1.70	17.63	22.21	-0.29	1.44	20.32
SIM <sub>ijt</sub>	-2.29	1.46	-7.16	-0.69	-0.93	3.16	-2.03
$\Delta$ SK <sub>ijt</sub>	2.88	1.30	0.01	5.19	-0.59	2.23	3.23
MP <sub>it</sub>	18.66	2.57	14.11	30.50	0.68	4.39	18.84
OPEN <sub>it</sub>	4.49	0.44	3.82	5.09	-0.22	1.35	4.68
Distance <sub>ij</sub>	8.77	0.77	6.28	9.87	-1.16	3.69	9.03
Tariff <sub>ijt</sub>	1.63	1.38	-8.73	4.03	-3.53	20.15	1.84
HGDP <sub>it</sub>   $\Delta$ SK <sub>ijt</sub>	57.74	25.20	0.15	95.72	-0.75	2.28	67.93
$\Delta$ SK <sub>ijt</sub>  DIST <sub>ij</sub>	25.60	12.03	0.06	47.62	-0.49	2.14	28.87
FTA <sub>ijt</sub>	0.19	0.39	0.00	1.00	1.62	3.62	0.00
FTA <sub>ijt</sub>  Dist <sub>ij</sub>	1.40	2.95	0.00	9.13	1.65	3.79	0.00
FTA <sub>ijt</sub>   $\Delta$ SK <sub>ijt</sub>	0.37	0.95	0.00	4.35	2.78	9.82	0.00
FTA <sub>ijt</sub>  MP <sub>it</sub>	3.58	7.38	0.00	30.50	1.66	4.04	0.00
BIT <sub>ijt</sub>	0.38	0.48	0.00	1.00	0.51	1.26	0.00
BiFTA <sub>ijt</sub>	0.01	0.08	0.00	1.00	12.10	147.34	0.00

## 4. Empirical Results

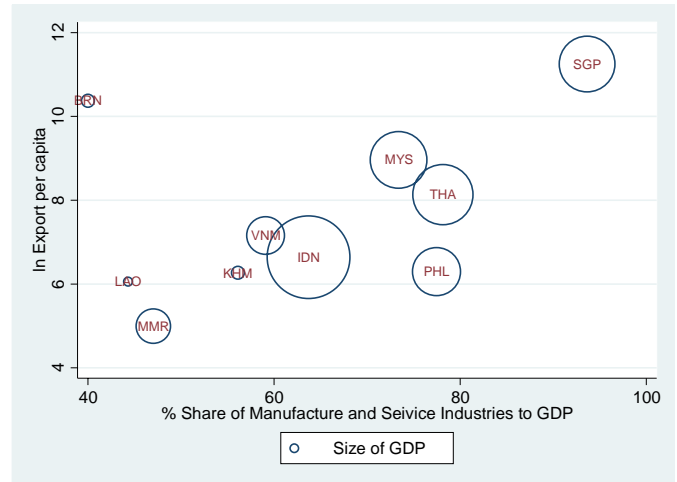
### 4.1. A Classification based on Industrial Development Stages of ASEAN Countries

In this subsection, how ASEAN countries were classified based on economic characteristics of industrial structures is presented. The measurement method was applied from the research of Joo et al. (2011).

Industrialization is the main hope of most developing countries that are trying to increase the levels of income (Chenery, 1955). A main role of industrialization contributes to diversify the economic structures so that developing countries where primary industry was dominant can increase incomes by producing and exporting manufacturing commodities which are in high demand in the world market; due to the low income and price elasticities of demand for the primary products, industrial diversification is inevitable for higher rate of economic growth (Lutz, 1994). Therefore, it is needed to recognize how ASEAN industries are diversified and how much ASEAN is prepared for the global-

ization in the world.

<Figure 1> presents the degree of economic diversity of ASEAN around the year 2012. The range of economic diversity of ASEAN countries was specified according to the share of manufacture and service industries to GDP and export per capita. <Table 4> classified the industrial development stages of ASEAN countries with five groups. As a result, a broad range of economic diversity is observed as a main feature of ASEAN economy.



Source: author's calculation using data from the World Bank (2012) and the UN Comtrade (2012).

<Figure 1> Economic Diversity of the ASEAN

### 4.2. Estimation Results and Analysis

The regression analysis was conducted with a method of panel data analysis; panel data analysis enables to estimate more efficient estimators compared to cross-section and time-series data analysis in that problems by unobserved heterogeneity between individual groups and multicollinearity between variables can be alleviated. Therefore, to control unobserved heterogeneity, country-pair effects were adopted in the model for the present panel analysis, following the suggestions of Hummels & Levinshon (1995) and Egger & Pfaffermayr (2003). In addition, the present study endeavored to reflect the diversity of economic structures in ASEAN countries so that more realistic FDI trends after ASEAN FTA were investigated.

<Table 4> Diversity of Economic Structure among ASEAN Member Countries

Category	Feature of Economic Structure	Countries
Diversified Economy	High proportion of manufacture and service industries	Singapore
Ongoing Industrialization Economy	Vitalized manufacture and service industries, but not yet competitive in the world market	Thailand, Malaysia, Philippines

Incipient Industrialization Economy	Onset of manufacture and service industrialization	Indonesia Vietnam, Cambodia
Preindustrial Economy	Predominant proportion of agricultural sector	Laos, Myanmar
Resource-Rich Economy	Heavily relying on exporting natural resources	Brunei

Note: This classification is based on around the year 2012.

<Table 5> presents the estimation results for country classification by the industrial development stages. According to tests of hypotheses, including Hausman test, in panel models, estimation results with fixed effect were supported for the overall ASEAN economy, ongoing industrialization economy, and incipient industrialization economy. However, for the diversified ASEAN economy, estimation results with random effect were more proper. In addition, more robust estimators were endeavored to be obtained by considering panel-level heteroskedasticity in the regression models; however, for the incipient industrialization economy, the estimation results were reported based on less robust standard error due to the insufficient rank to perform the model test, but the explanatory powers of coefficients for less robust standard error were not changed so much compared to those for robust standard error.

Major estimation results for an economic effect of ASEAN FTA on FDI flows were analysed as follows. Mainly by interpreting the interaction terms, major trends of FDI flows after ASEAN FTA can be clarified. Major estimation results indicated with responses of FDI flows to ASEAN FTA were diverse among ASEAN member countries by industrial development stages.

First of all, the result of overall ASEAN countries are suggested in column (1) of <Table 5>. Summarizing variables with high explanatory power and their signs, Openness and HGDP were significant at the 1% significant level, and the positive signs were reported. As for the coefficient of FTA, ASEAN FTA was significant at the 10% significant level, and the positive sign was presented. However, FTA\_MP was significant at the 5% significant level, but the negative sign was reported. Analyzing the results based on the previous theoretical and empirical studies, as suggested in Section 2, the positive sign for the coefficient of Openness suggests that economic openness have a positive influence on FDI flows into the ASEAN. The positive sign for the coefficient of HGDP suggests that a rise in ASEAN incomes positively contributed to FDI flows into the ASEAN. In addition, the positive sign for FTA suggests that ASEAN FTA was beneficial for FDI flows into the ASEAN. Meanwhile, the negative sign for the coefficient of FTA\_MP can be interpreted as the influence on ASEAN market after ASEAN FTA has been decreased. In other words, ASEAN FTA contributed on FDI flows into the ASEAN, while decreasing incentives to horizontal FDI flows but considerably increasing incentives to vertical FDI flows.

However, when classifying ASEAN countries with the industrial development stages, which are suggested in the columns from (2) to (4) of <Table 5>, the changes in motives for

FDI inflows were presented diversely by group. As for the diversified economy which is relevant to Singapore, just the coefficient of SIM was significant at the 1% level with the negative sign, and the other coefficients were not reported significantly; this result can be interpreted as bilateral similarity in economic size between Singapore and other parent countries has negative relationship with FDI flows into Singapore. Meanwhile, the effect of ASEAN FTA on FDI flows into Singapore was not significant. If referring to the previous theoretical and empirical analysis results, the negative sign for the coefficient of SIM suggests that the motives to vertical FDI have been strong in Singapore. According to previous studies, developed countries were usually interested in horizontal FDI which mainly considering large market size, rather than vertical FDI which mainly considering reduction of transaction cost. However, it is a different feature that vertical FDI was the main type of FDI in Singapore, which also meets the standards of the World Bank as high-income economies and the IMF as advanced economies. However, it was a similar feature with relationships between developed countries that an economic effect of ASEAN FTA was not significant in Singapore. Singapore has already promoted foreign investment-driven policy before ASEAN FTA, and thus it can be regarded that the role of ASEAN FTA was ancillary to Singapore.

For the ongoing industrialization economy which is relevant to Thailand, Malaysia, and the Philippines, the coefficients for Openness and HGDP were significant at 1% level with the positive sign. As for the coefficient of FTA, ASEAN FTA was significant at the 10% significant level, and the negative sign was presented. However, FTA\_MP was significant at the 5% significant level, and the positive sign was reported. Analyzing this results, in case of the group of the ongoing industrialization economy in ASEAN, economic openness has contributed considerably on FDI inflows, and it was definite that the motive of horizontal FDI to capture the markets was strong. However, it turned out that an economic effect of ASEAN FTA on FDI inflows was negative; it can be understood as in Thailand, Malaysia, and the Philippines, horizontal FDI had been mainly interested, but after ASEAN FTA, the horizontal firms replaced foreign investments with trade transactions. However, it is noticeable that an influence of market potentials after ASEAN FTA has increased. It means that ASEAN FTA negatively influenced on horizontal FDI, but export platform FDI, which is usually interested in third-country effects, was motivated as a newly pattern of FDI in this region after ASEAN FTA was in effect.

Finally, with respect to the incipient industrialization economy which is relevant to Indonesia, Vietnam, and Cambodia, the coefficients of HGDP and SIM were significant at 1% level with the positive sign, and the coefficients of SK and MP were significant at 10% and 5% levels with the positive signs, respectively. As for the coefficient of FTA, ASEAN FTA was significant at 1% level with positive sign, and FDI\_Dist was also significant at 1% level with the negative sign. FTA\_SK was significant at 10% level with the positive sign. If analyzing this estimation results, it was definite that both horizontal and vertical FDI have been brought into the incipient industrialization economies in ASEAN; especially HGDP representing income levels



and SIM representing bilateral similarity in economic size have contributed so much on horizontal FDI inflows, and SK representing relative factor endowments differences has contributed on vertical FDI flows. Meanwhile, in that the coefficient of FTA was significant at 1% level with the positive sign, it is decided that ASEAN FTA has greatly influenced on FDI flows into the incipient industrialization economies in ASEAN. In particular, it turned out that vertical FDI has been motivated to be increased after ASEAN FTA based on the interpretation with the signs of coefficients for FTA\_Dist and FTA\_SK. This estimation results suggest that an influence of the distance on FDI inflows has increased negatively and an influence of the relative factor endowments differences on FDI inflows has increased positively after ASEAN FTA.

**<Table 5>** An Economic Effect of ASEAN FTA on FDI flows into the ASEAN

VARIABLES	(1)	(2)	(3)	(4)
	Overall ASEAN	Diversified ASEAN Economy	Ongoing Industrialization Economy	Incipient Industrialization Economy
HGDP	0.693*** (0.224)	0.303 (0.259)	1.213*** (0.435)	2.005*** (0.288)
SIM	0.145 (0.353)	-0.588*** (0.225)	0.311 (0.471)	2.084*** (0.554)
SK	-2.663 (3.718)	6.535 (4.552)	-5.039 (6.377)	4.993* (2.792)
MP	0.048 (0.044)	-0.026 (0.018)	-0.102 (0.155)	0.100** (0.050)
Openness	0.774*** (0.187)	-0.159 (0.271)	1.564*** (0.274)	-0.247 (0.258)
HGDP_SK	-0.023 (0.078)	-0.263 (0.160)	-0.019 (0.184)	-0.336*** (0.088)
SK_Dist	0.327 (0.377)	-0.122 (0.240)	0.565 (0.491)	0.381* (0.211)
FTA	4.267* (2.344)	-4.399 (7.948)	-6.827* (3.549)	12.172*** (3.300)
FTA_Dist	-0.281 (0.290)	0.646 (0.869)	0.146 (0.201)	-1.411*** (0.418)
FTA_SK	0.033 (0.073)	0.085 (0.097)	-0.166 (0.141)	0.233* (0.140)
FTA_MP	-0.080** (0.036)	-0.044 (0.046)	0.309** (0.152)	-0.030 (0.069)
BIT	-0.213 (0.200)	0.375 (0.267)	-0.602* (0.326)	-0.125 (0.201)
BiFTA	-0.169 (0.108)	0.111 (0.126)	0.050 (0.073)	0.014 (0.506)
lnDistance	-	-0.345 (0.854)	-	-
Constant	-4.322 (4.877)	10.737 (9.215)	-15.047* (8.938)	-27.067*** (5.604)
Observations	1,701	248	800	653
Types of Model	FE	RE	FE	FE
R-squared	0.130	0.331	0.231	0.252
F-test (FE or	109.08***	-	127.45***	60.06***

Pooled OLS)				
Hausman (FE or RE)	154.05***	3.04	246.37***	69.61***
Breusch and Pagan (RE or Pooled OLS)	-	594.78***	-	-
Test for the error component model (RE or AR(1))	-	1.30	-	-
Modified Wald test for groupwise heteroskedasticity	410,000** *	82,761.50 ***	82,614.79 ***	210,000***

Notes: (1) Robust standard errors in parentheses.  
 (2) \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

### 5. Conclusion and Implications

This study employed panel regression methods to analyze an economic effect of ASEAN FTA on FDI flows. It is evaluated that horizontal FDI flows into the ASEAN were effectively increased thanks to ASEAN's steady efforts to open up their economies. In addition, ASEAN FTA led to increase vertical FDI into this region. The effect of ASEAN FTA on vertical FDI flows became larger as the industrial development stages were earlier. Meanwhile, for Singapore at the stage of diversified economy, there was no significant effect for the ASEAN FTA on FDI inflows. However, after ASEAN FTA was in effect, it was also observed that not only vertical FDI flows into the ASEAN have been effectively increased especially in Indonesia, Vietnam and Cambodia at the stage of incipient industrialization economy but also the incentives to export platform FDI as a form of third-country effects was detected to be increased especially in Thailand, Malaysia, and the Philippines at the stage of ongoing industrialization economy.

These results have suggestions to policy makers and corporate investors in the world. First, ASEAN foreign policies including ASEAN FTA tends to pursue to give a beneficial effect especially on vertical FDI flows, which is compared to previous studies for the patterns of FDI flows into developed countries where FDI incentives tend to be focused on capturing markets. Furthermore, export platform FDI was detected to utilize the increasing ASEAN market potentials after ASEAN FTA was in effect. Therefore, although much more still seems to remain to be done for further liberalization of ASEAN FDI policies (Urata & Ando, 2011), policy makers and corporate investors in source countries need to pay more attention to ASEAN's efforts on "a single market and production base in ASEAN" through AEC or ACIA.

However, one of important findings that the results of this study suggest is that FTA itself is a supporting role to construct fair and predictable investment-related institutions. Therefore, for sustainable economic growth, it needs to be considered how the

more fundamental FDI incentives such as not only different factor proportions compared to the source countries but also market size and market growth rate can be utilized and maximized for FDI facilitations. For further studies, more specific ideas of how factor proportions can be diversified and systematized more concretely and how potential market demands of host countries can be explored would seem to be required to be developed.

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