

ASEAN and Economic Integration: An Empirical Analysis on Effectiveness of Investment Sources as Foreign Exchange

アセアンと経済統合

－ 外貨投資資源の実効性に関する実証分析 －

by

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LIST OF ABBREVIATIONS

ASEAN Association of Southeast Asian Nations	3
AEC ASEAN Economic Community	7
AFTA ASEAN Free Trade Area	7
MNCs multinational corporations	16
NAFTA North American Free Trade Agreement	3
AIA ASEAN Investment Area	67
ACIA ASEAN Comprehensive Agreement on Investment	66
IMF International Monetary Fund	1
IBRD International Bank for Reconstruction and Development	1
GATT General Agreement on Tariffs and Trade	2
WTO World Trade Organization	2
UNCTAD United Nations Conference on Trade and Development	2

UNGA United Nations General Assembly	2
OECD Organization for Economic Cooperation and Development	2
EU European Union	2
ECSC European Coal and Steel Community	2
EEC European Economic Community	2
EC European Community	3
NAFTA North American Free Trade Agreement	3
COCM Central American Common Market	3
MERCOSUR Mercado Común del Sur	3
ECOWAS Economic Community Of West African States	3
ECCAS Economic Community of Central African States	3
SAARC South Asian Association for Regional Cooperation	3
RTAs Regional Trade Agreements	3
TPP Trans-Pacific Partnership	4
RCEP Regional Comprehensive Economic Partnership	4
VAR Vector Autoregressive	5
FTA Free Trade Agreement	3

FTAs Free Trade Agreements	3
ODA Official Development Assistance	6
FDI Foreign Direct Investment	6
GVCs global value chains	4
PTA preferential trading arrangements	11
NTBs non-tariff barriers	11
ASC ASEAN Security Community	11
ASCC ASEAN Socio-Cultural Community	11
WBG World Bank Group	14
PPP-CCSA Public-Private Partnerships Cross Cutting Solution Area	14
HDI Human Development Index	14
NICs newly industrialized countries	14
CGE Computable General Equilibrium	45
EPAs economic partnership agreements	40
EPA economic partnership agreement	40
ACFTA ASEAN-China FTA	41
SAFTA South Asian Free Trade Area	50

KITA Korea International Trade Association	44
PPML Poisson pseudo-maximum likelihood	54
CEPII Centre D'Etudes Prospectives	54
ACIA ASEAN Comprehensive Investment Area	66
BIT bilateral investment treaty	74
HPAEs high-performing Asian economies	100
ADF augmented Dickey-Fuller	109
VECM vector error correction model	110
GMM generalized method of mements	117
IRFs impulse-response functions	119

ABSTRACT

ASEAN and Economic Integration: An Empirical Analysis on Effectiveness of Investment Sources as Foreign Exchange

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This dissertation attempted to show the effectiveness of investment sources as foreign exchange, i.e., trade earnings, foreign direct investment (FDI), and official development assistance (ODA), in ASEAN's attempts to realize economic integration. ASEAN differs from other regional trade blocs pursuing economic integration in that the ASEAN countries share a common interest in the pursuit of development, but have diverse cultural and economic backgrounds. Therefore, this study on the economic integration of ASEAN had to consider the diversity within the bloc.

First, based on the theory of optimum currency areas, trade and FDI flows were analyzed to evaluate economic integration in ASEAN compared with other major economic integrations, e.g., the EU, NAFTA, and ASEAN+6. With regard to dependence on trade, ASEAN was the economic integration most inclined to be open to the world economy, but as an intra-regional relationship, it remained less developed and robust than the EU. Additionally, the growth rate of investment flows into ASEAN was higher than for other economic unions. Furthermore, comparison of ASEAN+6

and the EU in terms of trade flows reveals similar levels of economic openness for both economic unions, though from an intra-regional perspective the EU was more open than ASEAN+6. However, the gap in FDI flows between the ASEAN+6 and the EU recently has narrowed considerably.

Analysis of the effect on trade of ASEAN plurilateral RTAs (i.e., FTAs between ASEAN members and partners outside the bloc), focused on the 1988 to 2015 period, found significant growth of imports for ASEAN countries after RTA implementation. ASEAN plurilateral RTAs have affected trade flows less than ASEAN bilateral FTAs, but have had an even clearer trade diversion effect, which has led to the substitution effect. Analysis of the effect of ASEAN RTAs for partner countries outside ASEAN found that exports, imports, and total trade to Korea increased after those countries signed ASEAN RTAs. For Australia, New Zealand, and India, no significant changes in trade volume except imports were found after these countries signed ASEAN RTAs. Meanwhile, exports, imports, and total trade to China and Japan decreased after those countries signed ASEAN RTAs. Notably, ASEAN's trade tends to be more focused on East Asia and the Pacific than other continental regions. This economic affinity is expected to be a crucial motivation in overcoming the economic and cultural diversity among Asia Pacific countries.

Additionally, utilizing macro-level panel data from 2001 to 2012, the economic effect of ASEAN plurilateral RTAs on inward FDI to ASEAN countries was analyzed from the perspective of industrialization development stages. Initially, according to estimates for the ASEAN countries as a group, ASEAN RTAs had a positive impact in attracting vertical FDI to the region, representing a change from the previous situation where horizontal FDI had been dominant. Meanwhile, for Singapore, with its diversified economy, ASEAN RTAs were not effective in attracting FDI from source countries. Singapore had already successfully attracted vertical FDI before the ASEAN RTAs. For economies undergoing industrialization, such as Thailand,

Malaysia, and the Philippines, ASEAN RTAs exerted a negative effect in attracting FDI. In this group, horizontal FDI dominated before ASEAN RTAs, but ASEAN RTAs created a strong incentive for potential investors to replace such foreign investment with trade transactions. However, the influence of market potential increases after ASEAN RTAs, which induces third-country effects such as export platform FDI. Finally, for the incipient industrialization economies of Indonesia, Vietnam, and Cambodia, ASEAN RTAs attract vertical FDI. In this group, horizontal and vertical FDI coexisted before ASEAN RTAs, but after ASEAN RTAs vertical FDI became more attractive.

Furthermore, utilizing time-series and panel data from 1970 to 2009, the causal relationships were analyzed between GDP, exports, FDI, and ODA in ASEAN newly industrialized countries (NICs). According to the causality study based on vector autoregressive (VAR) analysis for each of countries, ODA was the dominant factor for GDP in Malaysia and the Philippines, and there were definite mutual causal relationships between exports, FDI, and GDP for Thailand. In addition, the results of the panel VAR analysis based on system GMM showed that ODA and FDI affected the GDP of ASEAN NICs by 18.2% and 8.3%, respectively, and FDI and ODA influenced the exports of ASEAN NICs by 13.6% and 8.6%, respectively. In summary, ODA has played a fundamental role in fueling the ASEAN economy, while FDI has also contributed considerably to GDP and export earnings in ASEAN NICs. However, the effects of the export earnings of ASEAN NICs on their economies appear to have been comparatively weaker.

CHAPTER I

Introduction

1.1 Research Background and Purpose

The history of the world economy since the experiences of the First and Second World Wars has been dominated by the pursuit of sustainable economic growth and development. After the two world wars, the international community tried to set up international organizations¹ to pursue common economic interests and foster peace. International economic cooperation organizations can be classified as either international financial institutions or international organizations for trade and commerce, following the custom of economists to differentiate the money sector and the real sector. Basically, the international economic order that has persisted from the post-war period to the present day is based on the Bretton Woods system, which was established to overcome the experiences of the international currency crisis and protectionism during the world wars.

In 1945, the International Monetary Fund (IMF) was established to provide a cornerstone to the international monetary order through seeking exchange rate stability, and in 1947, the International Bank for Reconstruction and Development (IBRD)

¹International organizations can be classified by their goals and activities into military security alliances, political cooperation organizations, economic cooperation organizations, and other organizations focused on human rights, labor, culture, and the environment. This dissertation focuses on international economic cooperation organizations.

was established for post-war reconstruction work and the development of developing countries. Additionally, the General Agreement on Tariffs and Trade (GATT) was established to enhance international trade through substantially reducing tariffs and other trade barriers and eliminating exclusionary preferential trade arrangements, on a reciprocal and mutually advantageous basis. The GATT developed into the World Trade Organization (WTO) in 1995.

In 1964, the United Nations Conference on Trade and Development (UNCTAD) was established, being a principal organ of the United Nations General Assembly (UNGA) dealing with trade and investment. The UNCTAD was established because of concern about the disparity between developed and developing nations, i.e., the north-south problem. Beginning in the mid-1950s, the issue faced by newly-independent nations in the the international market challenged the role of multinational corporations for an equitable development in the world economy. The problem of unbalanced growth was so important as other issues of European reconstruction work after the Second World War, such as the Marshall Plan, and the east-west problem caused by the ideological differences between the Soviet Union and the United States, i.e., the Cold War.

International organizations that promote economic cooperation among specific interested nations also contribute to the world economic order. The Organization for Economic Cooperation and Development (OECD), whose member states represent 85% of world GDP, strongly influences the world economy. Regional economic integration organizations pursue trade and development through partnership among nations that share a common geographic region. The European Union (EU) is the oldest and most developed such economic and political partnership, and brings together 28 European countries. The European Coal and Steel Community (ECSC), created in 1952, was the initial international organization based on supranationalism from which the EU derived, and developed into the European Economic Commu-

nity (EEC) in 1957 (with six member countries), then became the European Community (EC) in 1967 (with 15 member countries). What began as a purely economic union has evolved into an organization spanning numerous policy areas, from development aid to the environment (*Kostadinovski et al.*, 2013). To reflect these changes the organization was renamed the European Union (EU) in 1993. North American Free Trade Agreement (NAFTA) is a Free Trade Agreement (FTA) signed by the United States, Canada, and Mexico in 1994 that has systematically eliminated most tariff and non-tariff barriers to trade and investment among those three countries. By establishing a strong and reliable framework for investment, NAFTA has also helped provide the confidence and stability required to facilitate long-term investment.

Regional integration among developing countries has also been growing, and involves not just the pursuit of economic interests, but also the willingness to use collective bargaining power to pursue political goals. Association of Southeast Asian Nations (ASEAN), formed by five countries (Indonesia, Malaysia, the Philippines, Singapore, and Thailand) in 1967, grew after 1984 and eventually came to comprise 10 countries. Brunei joined in 1984, followed by Vietnam in 1995, Laos and Myanmar in 1997, and Cambodia in 1999. Other regional economic blocs are the South Asian Association for Regional Cooperation (SAARC), Central American Common Market (COCOM), Mercado Común del Sur (MERCOSUR), Economic Community Of West African States (ECOWAS), and Economic Community of Central African States (ECCAS).

In recent years, the creation of economic blocs through diverse Regional Trade Agreements (RTAs) has become predominant worldwide. Such bloc formation usually reflects the political and economic motivations of big established economic powers such as the United States and Japan, and big emerging economies such as China. In the 20th century when the GATT and WTO regime was established, Free Trade Agreements (FTAs) were a major economic issue in the world economy, and focused

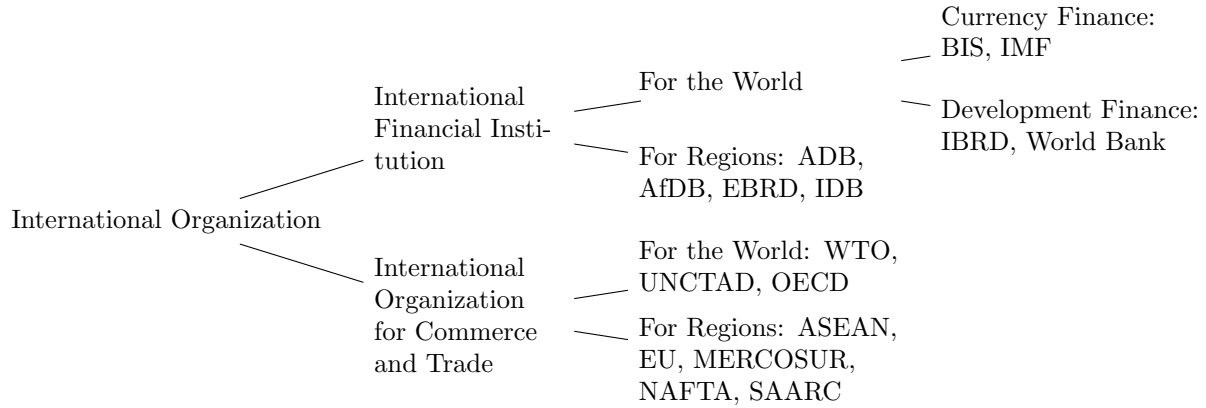


Figure 1.1: Classification of International Economic Cooperation Organizations

on using economic incentives to eliminate tariffs and non-tariff barriers and increase trade of goods and services among groups of interested countries. However, the 21st century looks to be a competition between advanced countries and emerging countries to occupy markets and gain economic and political power. ASEAN+3 (Korea, Japan, and China) and the Trans-Pacific Partnership (TPP)², as well as the Regional Comprehensive Economic Partnership (RCEP)³ are now the main examples of diverse RTAs. However, a more important aspect is that all proposed and recently established RTAs, such as ASEAN+3, the TPP, and the RCEP will greatly influence ASEAN, which has played a major role in the relationships of global production networks. Therefore, it is important to understand the economic progressiveness of ASEAN not only in relation to international mutual cooperation in the global network era, particularly global value chains (GVCs), but also in relation to the preparations required by underdeveloped countries to achieve sustainable economic growth and development.

²The TPP is a regional FTA negotiated among the United States, Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam. *Fergusson et al.* (2015) stated that the TPP aims to liberalize nearly all trade in goods and services and includes rules-based commitments beyond those currently established by the WTO

³The RCEP is a proposed FTA involving the ten member countries of ASEAN and six countries with which ASEAN has concluded FTAs (Australia, China, India, Japan, South Korea and New Zealand). *Panda* (2014) stated that the future dynamism of the RCEP will depend on negotiations between China and ASEAN, but also predicted that China-India relations may witness new dynamics and power and eventually facilitate India's 'Look East' policy.

This dissertation is intended to demonstrate how developing countries have progressed in international economic relations and to find more appropriate paths for economic development. Basically, this research is based on a neoclassical economic perspective and aims to adopt a critical view in the analysis of developing countries. The target countries are the ten ASEAN countries and results are obtained through quantitative analysis; specific analytical methods used are panel regression analysis and time-series analysis based on the Vector Autoregressive (VAR) and panel VAR methods.

The Harrod-Domar growth model influenced the neoclassical economic perspective. R.F. Harrod and E.D. Domar tried to find equilibrium conditions where a capitalistic economy develops continuously by adopting Keynes theory of effective demand. Keynes's theory was designed by fixing capital stock in the short term, but Harrod and Domar tried to induce capital accumulation in the long term. Harrod and Domar's theories were introduced in 1939 and 1946, and gained significant acceptance in developed countries that had experienced the Great Depression in the 1930s and in newly independent nations striving to escape poverty after the Second World War.

The Harrod-Domar growth model developed out of neoclassical growth theory. Neoclassical growth theory can be represented by the Solow neoclassical growth model. Solow introduced a growth model characterized by diminishing returns to each capital and labor factor of production but constant returns to scale to both factors. Technological progress explains the residual factor that generates long term economic growth. The Solow neoclassical growth model differed from the Harrod-Domar model in that the latter included the assumptions of a fixed coefficient and constant returns to scale.

Neoclassical economists have emphasized liberalization (opening up) of national markets because it draws domestic and foreign investment and thus increases the rate of capital accumulation. This neoclassical perspective can be traced back to

the Harrod-Domar growth model, which emphasized the importance to economic growth of saving and investing a certain portion of GDP. Poor countries have many restrictions on new capital foundation compared with developed countries, so foreign aid or private foreign investment has been accepted as crucial to filling the savings gap for such countries.

Basically, in this dissertation I attempt to focus on the effectiveness of ASEAN plurilateral RTAs (FTAs between ASEAN and countries outside the bloc), especially in terms of Foreign Direct Investment (FDI) and trade, and to demonstrate the contribution of investment sources as foreign exchange to the economic growth of the ASEAN developing countries. Sources of foreign exchange can be considered to comprise four categories: export earnings, private foreign direct investment, portfolio investment, and foreign aid. However, in this study I want to focus on the following three factors: trade, FDI, and Official Development Assistance (ODA). Through this research, I hope to suggest more policy applications for ASEAN developing countries. I also hope to provide empirical proof of the success of efforts to grow the world economy over recent decades, and of the usefulness of mainstream economic growth theories applied through globalization. Furthermore, I expect that this research can contribute to sustainable economic growth and development by suggesting practical preparation measures for underdeveloped countries seeking economic growth.

1.2 Research Methodology and Structure

This study is organized as follows. Chapter II summarizes the current economic situations of the ASEAN countries, and presents a brief historical summary of ASEAN and the macro and micro economic environments of relevant countries in the Asia Pacific region. Chapter III proposes a statistical analysis that describes how ASEAN has achieved progressiveness in its relationships with other economies. Particularly, based on the theory of optimum currency areas, the degree of economic integration

of ASEAN together with the statistical results offer a potential explanation for inter-regional trade flows involving ASEAN. Chapter IV suggests an empirical analysis of the effects of ASEAN plurilateral RTAs on trade, which includes whether the ASEAN RTAs have resulted in the Domino or Spaghetti Bowl effect, as well as trade creation or other effects. Chapter V estimates the effects of the ASEAN RTAs on FDI. ASEAN endeavored to create an ASEAN Economic Community (AEC) by 2015, a process that was the next step in efforts initiated in 1992 to achieve more efficient economic integration of the ASEAN Free Trade Area (AFTA); AFTA has often been considered more an investment agreement than a trade agreement (*Plummer, 2007*). Chapter VI suggests that a collective causal relationship exists between GDP and investment sources as foreign exchange (i.e., export, FDI, and ODA), a suggestion that has interesting implications. In Chapter VII, the main results are summarized and conclusions are discussed.

CHAPTER II

Cultural and Economic Overview of ASEAN

2.1 Cultural and Economic Diversity of ASEAN

2.1.1 Cultural and Historical Features of ASEAN

The name Southeast Asia originates from the region being located to the southeast of Europe, and the term gained widespread acceptance during the two world wars and the intervening years (*Heine-Geldern*, 1942). Social anthropologists further developed the concept of Southeast Asia during the 1960s and 1970s in the context of “regional studies”, which started out of the general inter- and multi-disciplinary category of scholarly and academic enquiry called “area studies” (*Acharya and Rajah*, 1999). The term Southeast Asia does not seem to have a long history, but it is notable that ancient societies also conceived of Southeast Asia as culturally homogeneous. The ancient Chinese called the South Asia region Nanyang or Nampo, meaning the southern ocean, the ancient Indians considered the region a golden land they called Suvarnabhumi, and the ancient Arabians called the region The Land Below the Winds (*Reid*, 1988).

Despite homogeneity within Southeast Asia, we should note the diversity of Southeast Asian countries that arises based on their unique geographic and cultural features (*Cho*, 2009). The mainland portion of Southeast Asia can be understood as separated geographically from the rest of the Asian continent and from the Malay

Archipelago. Geographical features also divide countries within Southeast Asia. For example, the Arakan Mountains separate India and Myanmar, the Bilauktaung and Tenasserim Ranges form a boundary between Myanmar and Thailand, and the Annamite Range separates Vietnam and Laos. Rivers have been major sources of political, economic, and cultural development for Southeast Asian countries, with examples including the Irrawaddy and Salween in Myanmar, the Chao Phraya in Thailand, and the Mekong, which traverses numerous Southeast Asian countries. Consistent with this geography, *Hergt et al.* (1977) stated that cultural exchange and trade in Southeast Asian countries historically have been concentrated along a north-south rather than an east-west orientation. Additionally, the Malay Archipelago has played a fundamental role in agriculture and trade. Populations from continental Southeast Asia surged into this island region to escape the rugged mountains. Moreover, Java in Indonesia proved to possess fertile ground thanks to its location on a volcanic island chain. Southeast Asia played a crucial role historically as a bridgehead for world trade, being located on trade routes used by the Indians, Europeans, Arabs, and Chinese. Given Southeast Asia's geographical characteristics, Buddhism naturally flourished in the continental part of the region, despite the linguistic differences among its constituent nations. Meanwhile, in the archipelago, not only was there propagation of Islam, but also cultural continuity based on the use of Malayo-Polynesian languages.

Despite this cultural diversity, Southeast Asian countries have developed a form of Southeast Asian Regionalism, demonstrated in the creation of ASEAN in 1967¹. At its inception, ASEAN pursued cooperation for political and strategic reasons, specifically to ease problems associated with the Cold War and conflicts in Indochina, and economic cooperation among ASEAN countries initially was not a central objective.

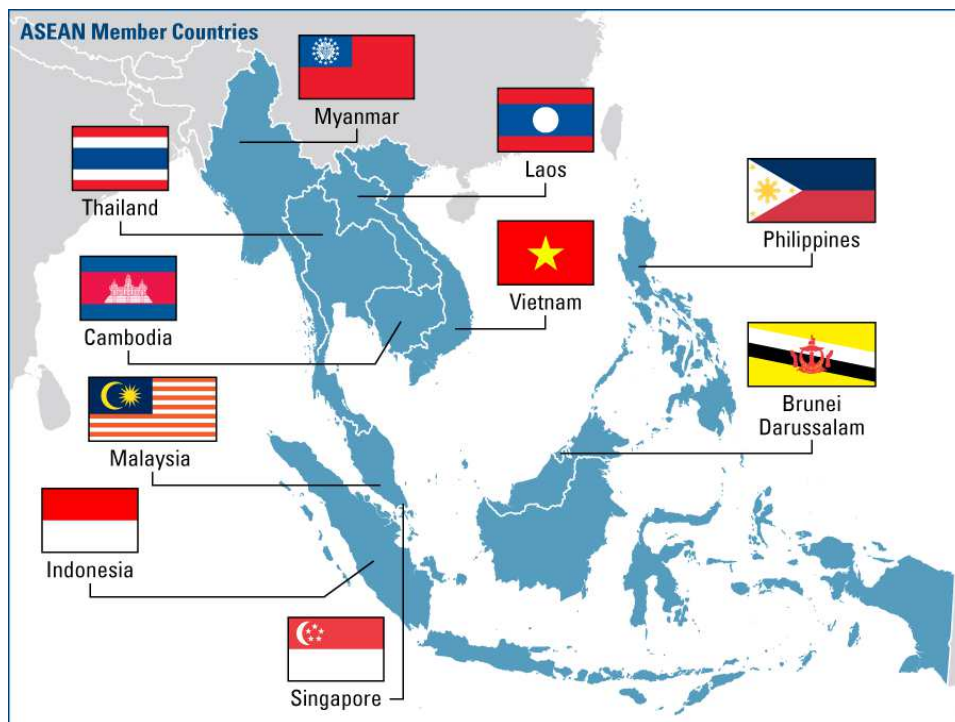
¹ *Weber* (2009) stated that although ASEAN has suffered from the Asian economic crisis, regional haze, and political upheaval in East Timor, trust has grown among members and the organization has managed to promote stability and economic growth. Therefore, the project can be evaluated as a success in terms of integration. Moreover, ASEAN has achieved success despite facing many unresolved challenges in terms of integration, at least when the degree of integration of ASEAN is compared with that achieved by the EU.

The signing of the Manila Declaration in the Philippines on December 15, 1987 was a first step towards the improvement of preferential trading arrangements (PTA), such as through pursuing intra-ASEAN economic cooperation to better realize the region’s trade and development potential, eliminate non-tariff barriers (NTBs), and establish cooperative governance attractive to private investors. The fourth ASEAN Summit was held in 1992. At this summit, ASEAN moved to enhance economic cooperation to establish AFTA. The prime goals of AFTA were the elimination of tariffs and non-tariff barriers within ASEAN, not only to construct a globally competitive production base but also to attract more FDI to the bloc. However, the ASEAN Economic Community (AEC), which was established at the 12th ASEAN summit in 2007, was an ambitious milestone in the evolution of the bloc (*Menon and Melendez, 2015*). As set out in the “ASEAN Charter”, the AEC aimed to realize the following key objectives by 2015²: (a) a single market and production base, (b) a highly competitive economic region, (c) a region of equitable economic development, and (d) a region fully integrated into the global economy (*Bolkiah et al., 2008*). A main purpose of the AEC is suggested in the AEC Blueprint as follows:

The AEC is the realisation of the end goal of economic integration as espoused in the Vision 2020, which is based on a convergence of interests

²The background to the establishment of the AEC can be traced back to the ASEAN Vision 2020. Recognizing the need for further integration within the bloc after the financial crisis in 1997, ASEAN adopted Vision 2020 and decided to push economic integration at the second unofficial ASEAN summit meeting in 1997. As a result, the sixth ASEAN summit released implementation plans for the ASEAN Vision 2020 in 1998, including The Hanoi Plan of Action, and the Declaration of ASEAN Concord II (Bali Concord II), which accelerated integration efforts that pivoted on three systems: ASEAN Security Community (ASC), AEC, and ASEAN Socio-Cultural Community (ASCC). The 10th ASEAN Summit in 2004 announced the Vientiane Action Program, which accelerated integration through 11 priority initiatives to be implemented by 2010: i) Initial Eleven Priority Sectors for Integration, ii) ASEAN Investment Area, iii) Trade in Goods, iv) Trade in Services, v) Financial Cooperation, vi) Transport, vii) Telecommunications and IT, viii) Science and Technology, ix) Energy, x) Food, Agriculture and Forestry Sectors, xi) Institutional Strengthening. Finally, the 12th ASEAN Summit, held in Cebu, the Philippines, in January 2007 agreed to establish the AEC by 2015, 5 years ahead of schedule. Additionally, the 13th ASEAN Summit, “One ASEAN at the Heart of Dynamic Asia”, held in Singapore in November 2007 strengthened the identity of ASEAN internationally, and saw ASEAN leaders sign the “ASEAN Charter.”

of ASEAN Member Countries to deepen and broaden economic integration through existing and new initiatives with clear timelines. In establishing the AEC, ASEAN shall act in accordance to the principles of an open, outward-looking, inclusive, and market-driven economy consistent with multilateral rules as well as adherence to rules-based systems for effective compliance and implementation of economic commitments.



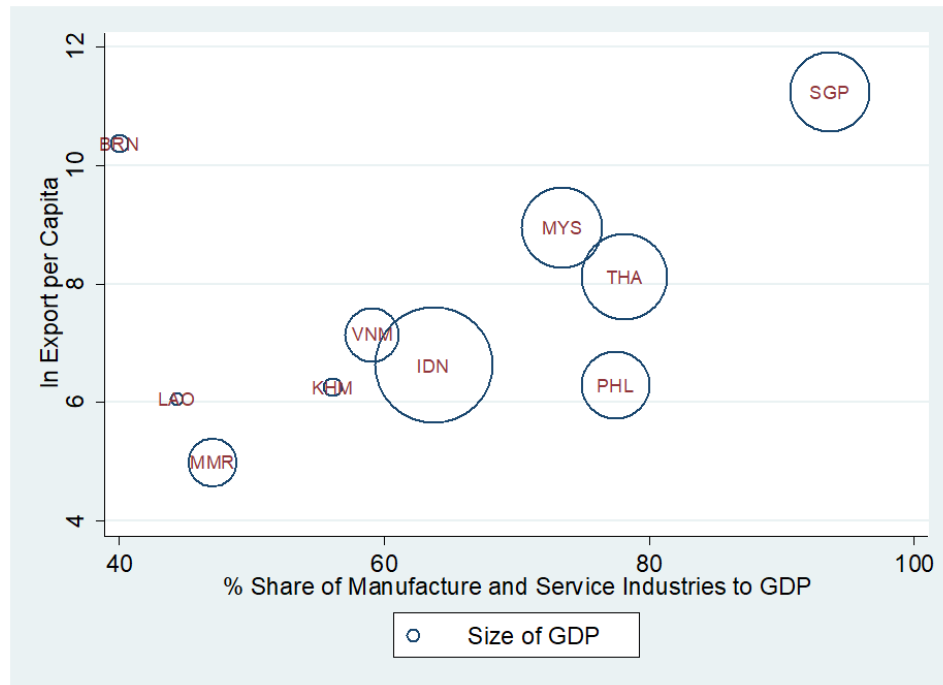
Source: U.S. Global Investors

Figure 2.1: Map Showing the ASEAN Member Countries

2.1.2 Economic Diversity of the ASEAN Member Countries

In this subsection, I prepared a diagram that shows the stages of industrial development of each ASEAN country. Industrialization is the main hope of most developing countries pursuing higher income levels (*Chenery, 1955*). A main role of industrialization is to diversify industry in developing countries, where development tends to

be concentrated in the primary sector, and to increase incomes by producing and exporting manufacturing commodities with high global market demand. *Harvey et al.* (2010) noted that there are 40 developing countries in which three or fewer commodities account for all export earnings. Additionally, *Lutz* (1994) suggested that in the case of primary products, because both the income elasticity and price elasticity of demand tend to be relatively low in underdeveloped countries, such countries tend to have a lower rate of economic growth. Therefore, it is helpful to recognize the diversity of ASEAN's industrial structure before evaluating economic integration within the bloc. The economic diversity of ASEAN member countries can be understood as follows.



Source: Author Calculation using World Bank and UN Comtrade Data

Figure 2.2: Economic Diversity of the ASEAN Member Countries

Figure 2.2 presents the economic diversity of ASEAN member countries around the year 2012, and can explain in detail the stages of industrial development. The diagram shows the relative positions of each ASEAN member country in terms of in-

dustrialization, and specifically the share of the manufacturing and service industries relative to GDP and total exports per capita, which are taken to be indicators of economic diversity. Among the developing ASEAN countries, a group that excludes Singapore because it is regarded as an advanced economy, the level of industrialization remains low, but the stages of transition into industrialization can be traced from the initial stage to the progressing stage. Additionally, export values per capita suggest the degree to which each ASEAN country is active in the world market.

Quadrant analysis of the graph clearly reveals the diversity of industrial development of ASEAN countries. Singapore is at the stage of having a diversified economy, where the manufacturing and service industries are developed to the level of an advanced economy³. Thailand, Malaysia, the Philippines, and Indonesia can be regarded as a group of industrializing economies whose manufacturing and service industries are prominent and cater to domestic demand but are not yet competitive in the world market⁴. Vietnam and Cambodia can be considered to belong to the group of incipient industrialization economies, but show distinct economic progress relative to the other CLMV countries, i.e., Cambodia, Laos, Myanmar and Vietnam⁵. Laos and Myanmar are at the preindustrial economy stage, where the focus is on the agricultural sector, and hence are vulnerable to economic risks such as export earnings instability. With respect to Brunei, the country remains resource-rich and heavily re-

³The World Bank Group (WBG) introduced Singapore, in October 2015, as a well-equipped economy supported by the twin pillars of strong manufacturing and service sectors, with a wide range of businesses represented, and a particular focus on high value added activities. In September 2011, the WBG and Singapore agreed to expand the Infrastructure and Urban Hub partnership with the Public-Private Partnerships Cross Cutting Solution Area (PPP-CCSA), which aims to combine Singapore's unique development experience and financial sector strengths. Furthermore, according to Human Development Index (HDI) figures for 2014, presented in a UN report, Singapore ranked ninth globally among the highly developed countries, and had the top ranking in Asia.

⁴In terms of socioeconomic classification, these four ASEAN countries can be regarded as newly industrialized countries (NICs) (*Bożyk*, 2006; *Guillén*, 2003), where rapid economic growth usually results from FDI or export-driven government policies and this growth is associated with social upheaval, i.e., population migration from rural to urban regions where manufacturing is growing.

⁵*OECD* (2013) positively evaluated the experience of the CLMV countries in opening up their centrally planned economies. However, the *OECD* forecast that Cambodia, Laos, and Vietnam need to conduct further reforms, specifically improving infrastructure and reforming education to produce more skilled labor, while Myanmar still has to proceed with its economic transition.

liant on oil revenues. However, Brunei lacks the diversification of industry necessary for sustainable growth.

Table 2.1: Diversity of Economic Structure among the 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 seiveice industries, but not yet competitive in the world market	Thailand, Malaysia, the 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: The results are based on the year 2012.

This study attempts to evaluate economic integration within ASEAN using a neo-classical economic perspective, and considers investment, trade, economic growth, and development. In the next section, as a preliminary analysis step, I mainly summarize general information on the macroeconomic and microeconomic climate for ASEAN, and for the major partner countries of ASEAN in the Asia Pacific region.

2.2 A Survey of the Economic Environment in ASEAN

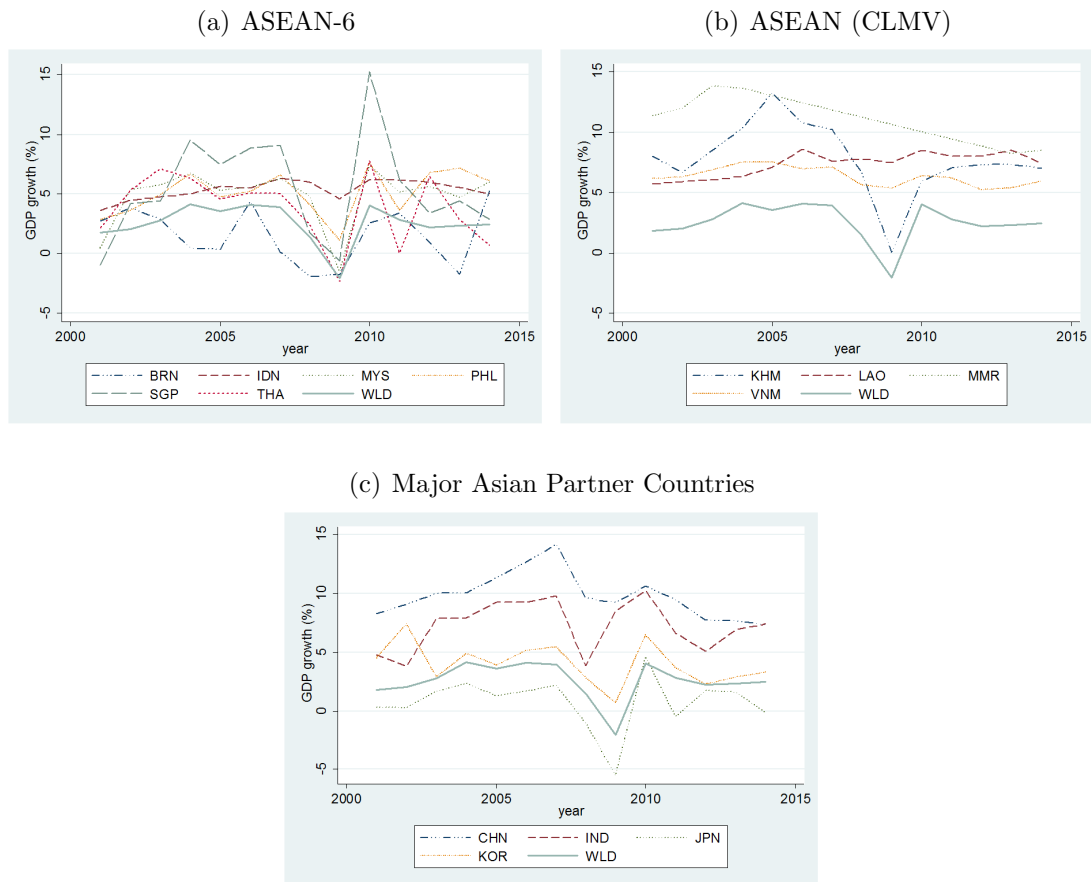
Although the cultural and economic diversity within the ASEAN bloc presented a challenge to integration, all the ASEAN countries have endeavored to cooperate with each other and create a more attractive environment for investment by liberalizing their policy structures. The AEC Blueprint announced the transformation of ASEAN into a single market and production base, as well as an equitable and highly competitive economic region. Therefore, an important concern is the attractiveness

to multinational corporations (MNCs) of the ASEAN market as an investment destination, particularly relative to other competitive emerging economies in the region, such as China and India. Presently, China and India, with their vast labor pools, not only have important roles as manufacturing bases for world industries but are also emerging markets. This section attempts to set the stage for subsequent chapters to further discuss the effectiveness of economic integration within ASEAN.

2.2.1 Macroeconomic Environment

The graph of forecast economic growth in Figure 2.3 shows the growth and development potentials of the ASEAN countries. Most notable is that, for the past decade, all ASEAN member countries except Brunei have exceeded the world average for economic growth. Countries in the region have tended to follow the surging economic growth of China and India, which are representative manufacturing bases and emerging markets. Vietnam, Laos, Indonesia, and Myanmar maintained comparatively stable economic growth rates even during the period of financial shock associated with the U.S. financial crisis of 2008-2009. Notably, most transitional ASEAN economies except Cambodia (i.e., the LMV countries) maintained continuous and stable economic growth despite the global financial crisis.

In addition, Table 2.2 presents the recent inflation rates of the ASEAN countries to check for the similarity of policy goals. In the short run, inflation rates for each country in an economic community tend to be dependent on economic structures, economic shocks, or policy responses; in the long run, however, inflation rates can be regarded as the results from economic goals and preferences of the countries. Currently, although there are fluctuations in inflation rates for the ASEAN countries, the trend of inflation rates of the ASEAN bloc is on the decrease; the average inflation rate for the ASEAN countries was 6.8% in 2006, but decreased to 3.4% in 2014. Notably, the standard deviation of inflation rates between the ASEAN countries is



Source: World Bank.

Figure 2.3: GDP Growth of ASEAN and its Major Asian Partner Countries

sharply decreasing. These statistics mean that the incentives for currency integration are increasing in the ASEAN bloc; if the deviation of inflation rates is small among the countries seeking currency integration, the cost to abandon their independent monetary policies will be decreased, which will make increase the incentives and profits for the currency integration.

Table 2.2: Inflation Rate of the ASEAN Countries

Country	2006	2007	2008	2009	2010	2011	2012	2013	2014
Thailand	4.6	2.2	5.5	-0.8	3.2	3.8	3.0	2.2	1.9
Malaysia	3.6	2.0	5.4	0.6	1.7	3.2	1.6	2.1	3.2
Cambodia	6.1	7.7	25.0	-0.7	4.0	5.5	2.9	2.9	3.9
Indonesia	13.1	6.4	9.8	4.8	5.1	5.4	4.3	6.4	6.4
Philippines	5.5	2.9	8.3	4.2	3.8	4.6	3.2	3.0	4.1
Singapore	1.0	2.1	6.5	0.6	2.8	5.3	4.5	2.4	1.0
Myanmar	20.0	35.0	26.8	1.5	7.7	5.0	1.5	5.5	5.5
Brunei	0.2	1.0	2.1	1.0	0.4	2.0	0.5	0.4	-0.2
Vietnam	7.4	8.3	23.1	7.1	8.9	18.7	9.1	6.6	4.1
Laos	6.8	4.5	7.6	0.0	6.0	7.6	4.3	6.4	4.1
Average	6.8	7.2	12.0	1.8	4.4	6.1	3.5	3.8	3.4
Std. Dev.	5.6	9.6	8.7	2.5	2.5	4.4	2.3	2.1	1.9

Source: Author's Calculations using the World Bank Open Databases.

2.2.2 Microeconomic Environment

A main goal of economic integration within ASEAN is to construct a competitive production base as suggested in the AEC Blueprint. Actually, since the establishment of AFTA ASEAN has pursued a pro-FDI policy intended to induce investment inflows into ASEAN from MNCs. Additionally, as of 2012 ASEAN had already concluded FTAs with its major trade partner countries (i.e., Australia, China, India, Japan, South Korea, and New Zealand), and was proceeding the RCEP to improve the trade environment within the region. Thus, I screened the microeconomic environments in ASEAN countries (see table 2.3, 2.4, and 2.5) based on the year 2012, when ASEAN finalized FTAs with six major strategic target countries.

First, it is notable that most ASEAN countries show sustainable progress in their business climates. If discussion proceeds according to the conception of industrialization stages suggested in the subsection 2.1.2, Singapore, a representative diversified economy both in ASEAN and the world, has retained her status as the best country for doing business; amazingly, Singapore has maintained this status for the past 9 years according to the World Bank report summarized in table 2.3. Most ASEAN NICs (Thailand, Malaysia, the Philippines, and Indonesia) display improving performance in microeconomic climate; Malaysia, the Philippines, and Indonesia advanced their rankings on the ease of doing business index, as suggested in table 2.3. Furthermore, the ASEAN countries still in economic transition continued to improve their microeconomic environments (refer to table 2.4). Compared with representative emerging countries in Asia, such as China and India, it might be considered that Thailand and Malaysia, which are ASEAN NICs still in the process of economic industrialization, have much more business-friendly microeconomic climates (see table 2.5). With respect to the CLV countries, their development is strongly influenced by the large emerging economies, i.e. China and India.

However, when it comes to the economic climate for foreign investors, the ASEAN countries do not seem to be improving. The difficulties faced by foreign investors seeking to start businesses continue to grow, and foreign investors in ASEAN countries may face higher barriers to market entry than local residents. According to a World Bank report, i.e., *World Bank* (2008, 2011, 2015), except in the CLV countries, administrative procedures for starting a business seem to be increasing in most ASEAN NICs, although initial costs and capital requirements are decreasing. Additionally, not only are the present conditions for contract enforcement less internationally competitive than before in almost all ASEAN countries, but the index of trading activity climate also seems to have deteriorated recently in all ASEAN NICs, whereas ASEAN CLV countries show improvements in atmosphere for private trading activities. These

microeconomic trends suggest that stronger government interventions affecting private investors tend to favor domestic investors in ASEAN countries, and conditions for foreign investors may be less welcoming than before.

Table 2.3: Relative Evaluations of Business Policies in the ASEAN-6 Countries

Measure	Singapore			Thailand			Malaysia		
	2007	2011	2015	2007	2011	2015	2007	2011	2015
Ease of doing business	1	1	1	15	17	49	24	18	18
Starting a business	9	4	10	36	78	96	74	50	14
Dealing with licenses	5	3	1	12	14	39	105	113	15
Registering Property	13	14	17	20	28	57	67	59	38
Getting Credit	7	8	19	36	67	97	3	1	28
Protecting Investors	2	2	1	33	13	36	4	4	4
Paying taxes	2	4	5	89	100	70	56	41	31
Trading across borders	1	1	41	50	17	56	21	29	49
Enforcing contracts	4	12	1	26	24	57	63	31	44
Resolving insolvency	2	2	27	44	51	49	54	47	45
Measure	Philippines			Indonesia			Brunei		
	2007	2011	2015	2007	2011	2015	2007	2011	2015
Ease of doing business	133	136	103	123	129	109	78	83	84
Starting a business	144	158	165	168	155	173	117	136	74
Dealing with licenses	77	102	99	99	71	107	66	83	21
Registering Property	86	117	112	121	99	131	178	107	148
Getting Credit	97	126	109	68	126	70	98	126	79
Protecting Investors	141	133	155	51	46	88	121	122	134
Paying taxes	126	136	126	110	131	148	28	20	16
Trading across borders	57	51	95	41	39	105	36	35	121
Enforcing contracts	113	112	140	141	156	170	158	151	113
Resolving insolvency	147	163	53	136	46	77	35	44	98

Source: World Bank, Doing Business 2008, 2012, 2016.

Table 2.4: Relative Evaluations of Business Policies in the ASEAN CLV Countries

Measure	Vietnam			Cambodia			Laos		
	2007	2011	2015	2007	2011	2015	2007	2011	2015
Ease of doing business	91	98	90	145	138	127	164	165	134
Starting a business	97	103	119	162	171	180	78	89	153
Dealing with licenses	63	67	12	144	149	181	111	80	42
Registering Property	38	47	58	98	110	121	149	72	66
Getting Credit	48	24	28	177	98	15	170	166	70
Protecting Investors	165	166	122	64	79	111	176	182	178
Paying taxes	128	151	168	21	54	95	114	123	127
Trading across borders	63	68	99	139	120	98	158	168	108
Enforcing contracts	40	30	74	134	142	174	111	110	92
Resolving insolvency	121	142	123	178	149	82	178	183	189

Source: World Bank, Doing Business 2008, 2012, 2016.

Table 2.5: Relative Evaluations of Business Policies in Asian Developed and Emerging Countries

Measure	Japan			Korea			China			India		
	2007	2011	2015	2007	2011	2015	2007	2011	2015	2007	2011	2015
Ease of doing business	12	20	34	30	8	4	83	91	84	120	132	130
Starting a business	44	107	81	110	24	23	135	151	136	111	166	155
Dealing with licenses	32	63	68	22	26	28	175	179	176	134	181	183
Registering Property	48	58	48	68	71	40	29	40	43	112	97	138
Getting Credit	13	24	79	36	8	42	84	67	79	36	40	42
Protecting Investors	12	17	36	64	79	8	83	97	134	33	46	8
Paying taxes	105	120	121	106	38	29	168	122	132	165	147	157
Trading across borders	18	16	52	13	4	31	42	60	96	79	109	133
Enforcing contracts	21	34	51	10	2	2	20	16	7	177	182	178
Resolving insolvency	1	1	2	11	13	4	57	75	55	137	128	136

Source: World Bank, Doing Business 2008, 2012, 2016.

CHAPTER III

Effectiveness Review of ASEAN Integration: Comparison Analysis with other major Economic Communities

In this chapter, I examine the extent to which economic integration has been achieved in ASEAN countries. Based on the theory of optimum currency areas (*Mundell, 1961; McKinnon, 1963*), trade and FDI flows are analyzed to evaluate economic integration in ASEAN compared to other major economic integrations.

3.1 Trade Integration between ASEAN and Major Economic Partner Countries in Asia

3.1.1 Degrees of Dependence on Foreign Trade and Regional Trade

The degree of dependence on trade of a country shows that country's openness, and is calculated by national trade value divided by national GDP. According to the theory of optimum currency areas, for countries that are smaller and more open, the likelihood of economic integration increases with the profit achievable through such integration.

Table 3.1 summarizes recent trends in the degrees of dependence on trade of ma-

major Asia–Pacific countries. For the ASEAN countries, their degrees of dependence on trade continued to increase except during the 2008 global financial crisis. The average degree of dependence on trade for the ASEAN countries was 141.7 in 2005 but increased to 196.2 in 2013. Notably, Singapore, Thailand, and Malaysia were more dependent on trade than the other ASEAN countries. Moreover, even Vietnam and Cambodia, both representative transition countries in ASEAN, show more dynamic foreign economic relations than Indonesia and the Philippines. Notably, the dependence on trade of the Philippines recently has actually been decreasing.

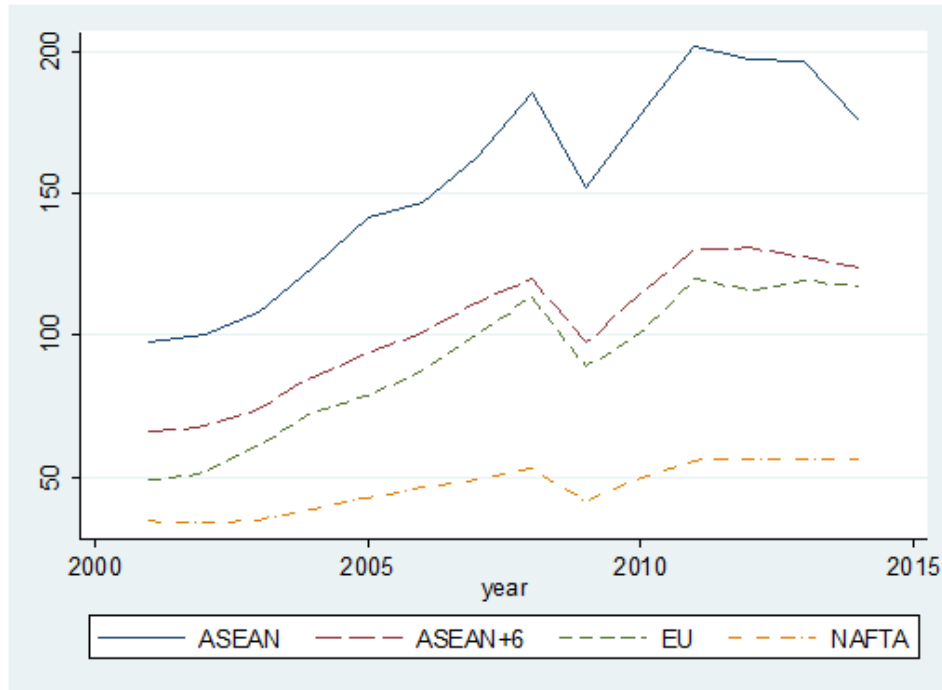
Table 3.1: Dependence on Trade of Major Asia Pacific Countries

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013
Thailand	129.4	139.8	152.7	177.7	146.9	179.8	217.5	213.1	208.0
Malaysia	178.3	192.5	199.9	209.8	168.8	203.4	220.6	213.4	208.8
Cambodia	88.5	94.0	92.2	107.1	108.5	120.7	138.0	149.2	172.3
Indonesia	50.1	53.7	58.8	78.3	60.0	77.7	94.9	89.7	82.2
Philippines	88.0	93.6	93.8	90.9	69.2	83.9	82.2	80.8	76.5
Singapore	337.2	368.1	371.6	427.1	336.7	375.5	413.7	406.6	386.9
Brunei	.	93.6	.	.	.	.	.	161.2	149.0
Vietnam	120.1	137.4	168.5	205.5	172.7	200.7	244.9	260.8	286.2
ASEAN Average	141.7	146.6	162.5	185.2	151.8	177.4	201.7	196.9	196.2
Japan	24.3	26.4	28.1	32.8	25.5	31.5	36.3	35.8	32.4
China	62.7	68.9	74.5	80.1	63.1	76.9	86.0	84.8	84.7
Korea	60.8	67.2	73.1	83.7	66.6	81.1	94.8	91.6	89.7
India	28.9	32.8	36.4	47.9	39.3	45.9	57.6	55.9	53.9
Australia	33.4	36.8	50.4	40.9	51.9	61.8	59.9	55.9	52.7
New Zealand	41.7	41.3	47.5	54.2	42.3	50.4	59.5	59.7	61.0
ASEAN+6 Average	93.6	100.7	111.7	120.0	97.3	114.9	130.2	130.9	127.8

Source: Author’s Calculations using World Bank and UN Comtrade Data.

Additionally, the average dependence on trade was much higher for the ASEAN countries than for other major economic integrations such as the EU and NAFTA, as suggested in Figure 3.1. As for the EU, overall dependence on trade continues to increase, and Belgium, the Netherlands, Malta, Estonia, Lithuania, Slovakia,

the Czech Republic, Hungary, and Slovenia are representative outward-looking EU economies; notably, with the exceptions of Belgium and the Netherlands, the highly trade-dependent countries in the EU are transition countries in eastern Europe. The average dependence on trade for the EU countries in 2005 was 78.6, which increased to 119.2 in 2013, much lower than for the ASEAN countries.



Source: Author's Calculations using World Bank and UN Comtrade Data

Figure 3.1: The Average Degree of Dependence on Trade of Major Economic Integrations

Meanwhile, if the economic relations of ASEAN are extended to include countries in the ASEAN+6 group, the degree of dependence on trade becomes similar to that for the EU, as indicated in Figure 3.1. On average, the degree of dependence on trade of the ASEAN+6 countries in 2005 was 93.6, but increased to 127.8 in 2013, slightly higher than for the EU. Japan has low dependence on trade, at around 30, and this contributes considerably to decreasing the dependence on trade of the ASEAN+6 countries. Meanwhile, the degree of dependence on trade of India was low in 2005, at

just 28.9, but increased to 53.9 in 2013, representing the results of India's open-door policy.

3.1.2 Degrees of Dependence on Intra-Regional Trade

The degrees of dependence on intra-regional trade show economic dependences among countries in a region, and are calculated as the amount of regional trade divided by national GDP. Table 3.2 and Figure 3.2 present the degrees of dependence on intra-regional trade in the Asia Pacific and EU regions.

First, the average degree of dependence on intra-regional trade of the ASEAN countries was 33.9 in 2005, and increased to 45.6 in 2013, meaning that the average degree of dependence on intra-regional trade of the ASEAN countries was below 50. Only Singapore had dependence on intra-regional trade of around 100, which suggests that intra-regional dependence on trade in ASEAN remains comparatively low, and that the trade activities of ASEAN countries are focused on neighboring countries outside the ASEAN region. As a result, the average degree of dependence upon intra-regional trade for the ASEAN+6 countries rose from 46.8 in 2005 to 72.3 in 2013 compared with the results for the ASEAN countries.

Meanwhile, the degrees of dependence on intra-regional trade were higher for EU countries than for ASEAN countries. The average degree of dependence on intra-regional trade for the EU countries was 54.1 in 2005 and rose to 77.1 in 2013, which is 50 higher than the results obtained for the ASEAN countries. Belgium was the EU country with the highest dependence on intra-regional trade, while transitional countries such as Estonia, the Czech Republic, Slovakia, and Hungary tend to show relatively high intra-regional trade dependence. However, the UK, France, Italy, Greece, and Cyprus had low dependence on intra-regional trade, at less than 35.

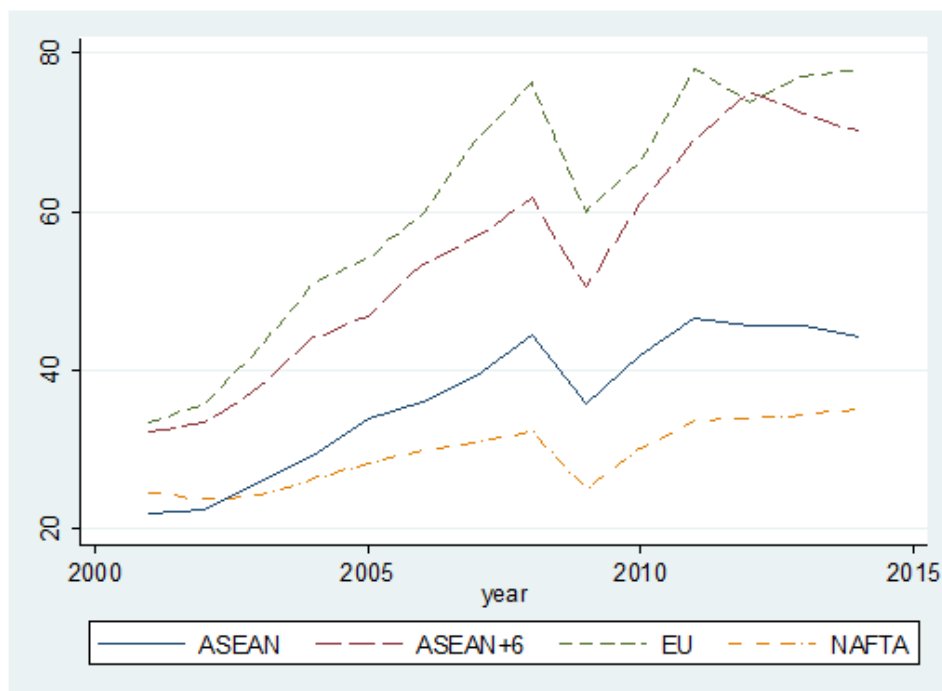
As for the comparison to the major economic integrations suggested in Figure 3.2, the average degree of dependence on intra-regional trade of the ASEAN countries was

Table 3.2: Degree of Dependence on Intra-Regional Trade of Countries in the Asia Pacific Region

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013
Thailand	25.9	27.5	29.8	34.9	29.3	35.5	43.4	43.4	43.9
Malaysia	45.3	48.8	50.1	52.5	43.0	53.2	57.5	58.2	57.1
Cambodia	14.8	18.2	19.4	24.5	25.6	27.5	33.0	35.2	38.5
Indonesia	11.5	12.4	14.4	20.0	14.7	19.1	23.2	22.4	21.0
Philippines	16.0	17.4	18.6	18.6	14.4	21.3	17.4	17.1	14.6
Singapore	97.4	105.4	106.3	118.9	91.9	102.7	109.7	108.2	102.1
Brunei	.	27.1	.	.	.	.	.	36.7	44.5
Vietnam	26.1	30.7	36.4	42.9	30.7	34.2	41.6	43.7	43.2
ASEAN Average	33.9	35.9	39.3	44.6	35.7	41.9	46.5	45.6	45.6
Japan	10.0	10.7	11.7	13.8	11.7	14.8	17.2	16.8	15.0
China	21.0	22.0	23.5	25.0	20.2	24.7	27.2	26.0	25.3
Korea	27.7	30.2	33.2	37.9	31.1	38.6	44.9	43.2	42.5
India	6.8	8.2	9.5	11.8	10.5	12.3	14.9	14.1	13.2
Australia	18.7	20.9	29.9	24.9	33.3	39.7	38.5	34.3	34.9
New Zealand	22.2	22.5	26.7	30.3	23.8	29.6	33.8	35.0	36.0
ASEAN+6 Average	46.8	53.3	56.8	61.8	50.4	61.1	69.1	75.1	72.3

Source: Author's Calculations using World Bank and UN Comtrade Data.

higher than for the NAFTA countries but lower than for the EU countries. However, ASEAN+6 has intra-trade dependence comparable to that of the EU.



Source: Author's Calculations using World Bank and UN Comtrade Data.

Figure 3.2: The Average Degree of Dependence on Intra-Regional Trade of Major Economic Integrations

3.1.3 Intra-regional Trade Intensity Index

Intra-regional trade intensity is the ratio of a given region's intra-regional trade to that region's share of world trade. This indicator is used to determine whether the value of intra-regional trade is greater or smaller than would be expected based on the region's importance in world trade.

First, the average intra-regional trade intensity index of the ASEAN bloc was 116.1 in 2005, but increased to 162.3 in 2013. However, for most ASEAN countries the intra-regional trade intensity index is decreasing. Singapore, the only developed country in ASEAN, shows the lowest intra-regional trade intensity index, at 13.9

in 2005, decreasing to 12.1 in 2013. The developing countries in the ASEAN bloc exhibit diversity in intra-regional trade intensity index. For Thailand and Indonesia intra-regional trade intensity is decreasing, but for Malaysia and the Philippines it is increasing. Moreover, for the ASEAN CLMV countries, especially Cambodia and Vietnam, intra-regional trade intensity is sharply decreasing relative to other ASEAN countries.

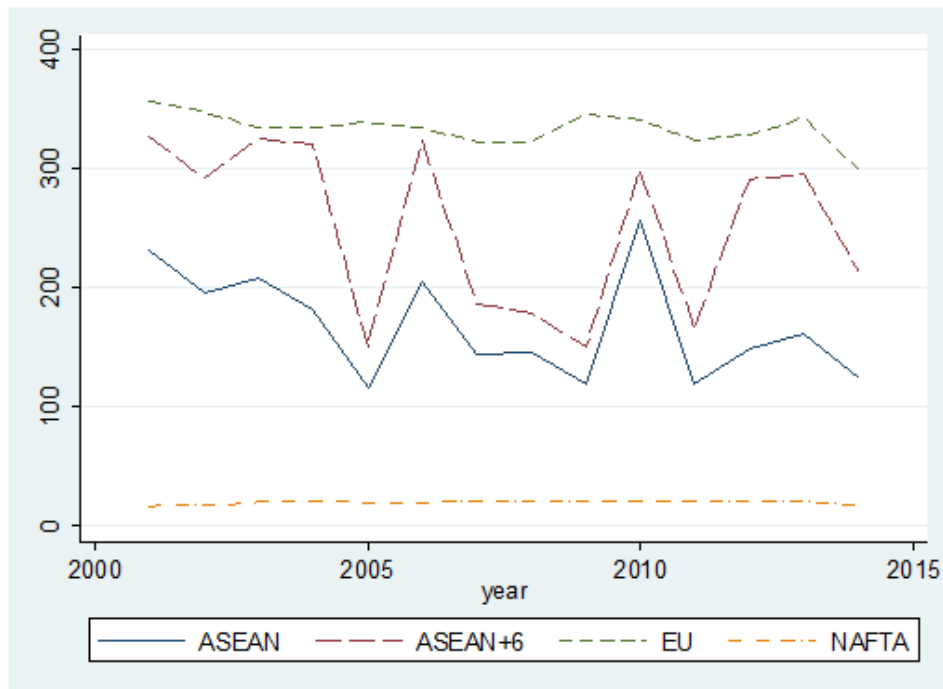
Meanwhile, the average intra-regional trade intensity index of the EU, as presented in Figure 3.3, was much higher than for the ASEAN and ASEAN+6 blocs, and the difference appears stable; the average intra-regional trade intensity index of the EU was 339.4 in 2005, and 342.4 in 2013. However, individual EU countries displayed a broad range of intra-regional trade intensity index scores, ranging from 7.3 to 2,640 during 2005 to 2013. The intra-regional trade intensity index scores for Germany, the UK, France, and Italy were less than 20, while those for Croatia, Luxembourg, Malta, Estonia, and Cyprus were more than 500.

If major economic integrations are compared, as suggested in Figure 3.3, the tendencies of the average intra-regional trade intensity index are similar for both ASEAN and ASEAN+6, and in both cases are generally both decreasing and lower than for the EU. However, the average intra-regional trade intensity index for NAFTA was the lowest among the representative RTAs, and the trend was stationary as in the EU.

Table 3.3: Intra-regional Trade Intensity Index in the Asia Pacific Region

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013
Thailand	18.0	18.2	18.0	17.6	17.1	15.6	15.5	14.9	15.8
Malaysia	20.5	20.8	21.4	22.4	22.3	21.5	22.4	22.6	22.6
Cambodia	620.9	706.3	812.3	827.9	650.6	647.9	662.4	553.8	433.7
Indonesia	33.0	34.3	35.5	30.5	28.2	25.1	22.9	22.9	24.9
Philippines	41.3	44.0	50.1	59.2	60.4	69.1	67.5	62.9	57.7
Singapore	13.9	13.4	13.9	13.4	13.0	12.3	12.2	11.8	12.1
Brunei	.	744.5	.	.	.	.	.	480.5	711.1
Vietnam	64.9	63.3	53.2	46.1	34.3	32.4	29.7	25.7	20.5
ASEAN Average	116.1	205.6	143.5	145.3	118.0	256.7	118.9	149.4	162.3
Japan	7.6	8.0	8.5	8.7	9.9	9.6	10.1	9.8	10.8
China	4.8	4.4	4.0	3.9	3.6	3.2	3.1	2.8	2.6
Korea	17.2	16.9	17.1	16.8	16.7	16.0	15.6	15.5	15.8
India	20.0	20.1	19.6	15.7	14.8	14.0	12.0	11.4	11.0
Australia	50.0	51.8	48.5	46.8	46.3	45.4	44.5	45.5	45.7
New Zealand	228.7	267.1	266.4	272.7	273.8	287.1	274.1	271.5	268.2
ASEAN+6 Average	150.0	323.5	186.8	178.7	150.0	298.7	165.3	291.1	294.9

Source: Author's Calculations using World Bank and UN Comtrade Data.



Source: Author's Calculations using World Bank and UN Comtrade Data.

Figure 3.3: The Average Intra-regional Trade Intensity of Major Economic Integrations

3.2 Degree of Integration in ASEAN through Direct Intra-ASEAN Investment

Outside dependence can be deepened not only by increased trade but also increased FDI. FDI contributes to the transfer of technology from developed to developing countries and so developing countries can benefit from increasing their development funds. Meanwhile, FDI tends to increase economic dependence between countries because it deepens dependence on cross-border capital transactions. If FDI between countries increases, economic integration can realize benefits through decreasing associated transaction costs. Therefore, the issue of economic integration matters especially to the authorities concerned with FDI, and the relationship between the construction of economic integration and FDI intensity will have positive bidirectional effects.

3.2.1 Features of FDI Flows for Major Economic Regions

Most FDI has been concentrated in major advanced economies due to differences in factor endowments between countries (*Johnson, 1957*). However, as industrialization has progressed in developing countries, FDI flows have increased steeply. Especially, as ASEAN has implemented institutional changes to improve its investment environment, the region is expected to see more lively economic activities and investment than ever before. Additionally, ASEAN has diverse economic features because it consists of both a developed country and underdeveloped countries. Therefore, ASEAN is expected to exhibit more diverse FDI flows than other economic regions.

Tables 3.4 and 3.5 show current FDI flows in the Asia Pacific region. On average, the total FDI flows of ASEAN increased 315.6% in 2014 relative to 2005, while FDI for the ASEAN+6 countries increased 258.1% over the same period. Meanwhile, the FDI inflow for ASEAN in 2014 was increased 287.1% relative to 2005, compared with

a 222.5% increase for ASEAN+6 over the same period. One representative feature of the FDI trend is that inward FDI is dominant in less developed economies and industrializing countries, and outward FDI is dominant in more industrialized and developed countries.

In the case of the ASEAN CLMV countries, inward FDI was increased by an average of more than four times in 2014 compared with 2005. For more industrialized ASEAN countries, inward FDI increased more than three times in 2014 compared with 2005; in the case of Indonesia FDI increased more than six times. However, with regard to the ASEAN+6 countries, for Japan and Korea, both representative developed countries in the Asia Pacific region, outward FDI increased more than five times between 2005 and 2014; especially, Japan's outward FDI surged from 386.6 billion US dollars in 2005 to 1,193.1 billion US dollars in 2014¹. Meanwhile, in China and India, both outward and inward FDI have increased together in tandem with efforts to establish production bases and market access in the world economy.

The volume of FDI of ASEAN+6 has continuously increased in recent years, narrowing the gap between the ASEAN+6 and EU countries (See Figure 3.4 and Figure 3.5). Sustained efforts to construct a single market and production base in ASEAN are a major reason for the surge of FDI flows in the Asia Pacific. Notably, despite the financial crisis in 2008, FDI activities in the ASEAN+6 have continued to increase steadily.

¹Both inward FDI and outward FDI are large in major developed countries in the EU and NAFTA blocs, such as the US, the UK, and Germany. However in Japan, inward FDI flows are small compared with outward flows.

Table 3.4: Total Foreign Direct Investment Flows in the Asia Pacific Region

(Unit: Million US\$)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Brunei	2,765	3,216	3,469	3,808	4,186	4,821	5,528	5,930	6,385	6,353
Cambodia	2,738	3,233	3,326	4,192	5,140	6,502	3,416	9,766	11,674	13,519
Indonesia	.	55,576	83,121	75,030	112,709	167,407	191,008	224,035	250,169	277,134
Laos	696	917	1,277	1,430	1,621	1,899	2,201	2,495	.	.
Malaysia	66,494	89,837	134,198	140,528	158,657	198,584	221,512	253,011	264,243	269,452
Myanmar	.	.	.	.	.	.	.	.	.	.
Philippines	17,006	19,045	26,130	27,482	29,026	32,606	38,456	45,655	76,286	92,696
Singapore	425,465	580,624	763,209	772,722	883,676	1,091,416	1,154,202	1,359,655	1,433,319	1,488,751
Thailand	66,581	84,818	102,986	105,092	121,833	160,655	192,783	221,877	237,103	265,080
Vietnam	22,509	24,994	32,159	42,038	50,338	59,238	67,707	77,275	88,131	98,481
ASEAN Average	75,532	95,807	127,764	130,258	151,910	191,459	208,535	244,411	295,914	313,933
Japan	487,486	557,203	675,472	883,704	941,070	1,045,955	1,188,577	1,243,451	1,288,720	1,363,752
China	329,300	367,585	444,998	562,054	718,838	905,028	1,136,583	1,345,467	1,570,378	1,814,878
Korea	143,562	164,961	196,733	192,675	243,212	279,532	307,592	360,751	419,672	440,589
India	52,943	97,906	149,871	188,549	252,057	302,481	315,863	343,060	346,389	381,909
Australia	453,116	566,827	732,831	551,982	803,919	976,804	970,096	1,084,024	1,011,702	1,008,127
New Zealand	55,872	62,889	73,963	58,084	70,481	77,856	84,616	92,271	94,914	95,469
ASEAN+6 Average	151,895	178,642	228,250	240,625	293,118	354,052	392,009	444,582	507,077	544,014

Source: UNCTAD (United Nations Conference on Trade and Development).

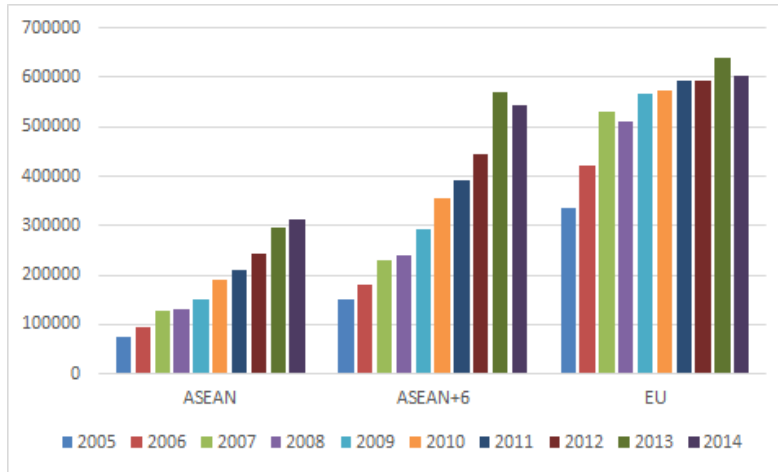
Table 3.5: Foreign Direct Investment Inflows in the Asia Pacific Region

(Unit: Million US\$)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Brunei	2,125	2,559	2,819	3,141	3,511	4,140	4,837	5,662	6,251	6,219
Cambodia	2,471	2,954	3,046	3,892	4,820	6,162	3,046	9,361	11,223	13,035
Indonesia	41,187	54,534	79,927	72,228	108,796	160,735	184,804	211,635	230,818	253,082
Laos	681	868	1,192	1,419	1,609	1,888	2,188	2,483	2,910	3,630
Malaysia	44,460	53,710	75,763	73,601	78,995	101,620	115,064	132,656	136,028	133,767
Myanmar	6,480	7,205	7,207	7,810	7,837	14,507	15,625	16,121	16,706	17,652
Philippines	14,978	16,914	20,463	21,746	22,931	25,896	30,995	36,459	47,276	57,093
Singapore	237,009	313,184	420,877	458,976	507,863	632,766	688,774	820,991	869,858	912,355
Thailand	61,413	78,152	94,679	94,529	106,934	139,286	155,036	172,471	178,259	199,311
Vietnam	22,444	24,844	31,825	41,404	49,004	57,004	64,523	72,891	81,791	90,991
ASEAN Average	43,325	55,492	73,780	77,875	89,230	114,400	126,489	148,073	158,112	168,714
Japan	100,901	107,636	132,854	203,374	200,144	214,880	225,787	205,752	170,710	170,615
China	272,094	292,559	327,087	378,083	473,083	587,817	711,802	832,882	956,793	1,085,293
Korea	104,879	115,774	121,957	94,722	121,933	135,500	135,178	157,876	180,860	182,037
India	43,202	70,870	105,790	125,212	171,218	205,580	206,354	224,987	226,552	252,331
Australia	247,748	302,079	391,761	307,751	439,387	527,064	553,910	611,055	561,507	564,608
New Zealand	44,094	50,120	58,967	44,214	56,680	61,139	65,608	72,742	76,174	76,791
ASEAN+6 Average	77,885	93,373	117,263	120,756	147,172	179,749	197,721	224,127	234,607	251,176

Source: UNCTAD (United Nations Conference on Trade and Development).

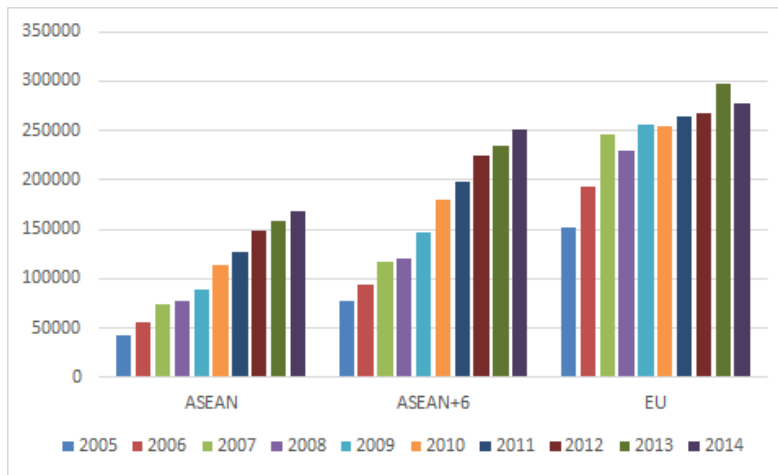
(Unit: Million US\$)



Source: Author's Calculations using UN Comtrade Data

Figure 3.4: Total FDI Flows in Major Economic Regions

(Unit: Million US\$)



Source: Author's Calculations using UN Comtrade Data

Figure 3.5: Total FDI Inflows in Major Economic Regions

CHAPTER IV

An Empirical Analysis of ASEAN's FTA Effects on Trade flows

4.1 Introduction to ASEAN's FTA Effects on Trade

Countries seeking FTAs usually hope to realize increased mutual economic benefits through economic interactions with two or more other countries with whom they share economic interests. To realize this goal, interested countries may thus purpose economic union through FTAs, where interactions among entities within a common FTA area are to be conducted according to the conditions afforded domestic entities (*Cho and Yoo, 2007*).

A main goal of this study is to analyze empirically how ASEAN FTAs have affected trade. Neoclassical economists have emphasized the liberalization (opening up) of national markets because it attracts domestic and foreign investment and thus increases the rate of capital accumulation. Trade openness can be a measure for economic liberalization, and export earnings in particular can contribute to economic development by providing foreign exchange that can compensate for savings gaps in developing countries. ASEAN has been an important economic organization for developing countries. Thus, this empirical analysis of ASEAN FTAs can demonstrate the progress of developing countries in their international economic relations and in

finding more appropriate means of economic development.

ASEAN's economic potential has attracted the global attention. The economic growth of Southeast Asia achieved an annual average of 7-8% for about 10 years from 1985. Previous studies summarized the main reasons for this high economic growth, described as the Asian Miracle, as follows. Capital inflow was much higher in the fast-growing ASEAN economies than elsewhere; especially, impressive investment rates and rapid expansion of foreign trade in the region fueled growth rates (*Urata*, 2001; *Sarel*, 1997). Government efforts were also evaluated as important to the high economic growth of ASEAN; various incentives for industrialization suggested by ASEAN states were used to strengthen exports and encourage foreign investments with potential to increase wages and enhance technology transfer (*Rasiah*, 1999; *Doraisami and Rasiah*, 2001).

Since AFTA was signed in 1992, market integration based on ASEAN has proceeded to strengthen intra-regional trade and enhance FDI inflows. However, given the structural limitations associated with ASEAN's being an organization for south-south cooperation, it was inevitable that ASEAN would expand to involve countries not only in East Asia but also in Oceania and South Asia. Lack of technology and capital have been chronic obstacles to economic growth for ASEAN countries. Thus, since 2000 ASEAN countries have prioritized economic independence and policy coordination as crucial tasks, although they were already showing their economic potential in the 1990s (*Yusuf*, 2001).

ASEAN has played a crucial cooperation role not only for Southeast Asian countries but also for regional economic relations in East Asia. Southeast Asia has rapidly expanded its foreign trade since the mid-1980s. Despite having experienced an economic crisis in 1998, the international importance of the ASEAN economy increased after RTAs become more activate in the 2000s. As of 2015, ASEAN had established FTAs with six countries: China, Korea, Japan, India, Australia, and New Zealand

(listed in order of the agreements coming into effect). Thus, based on the situation as of 2015, the FTA partner countries of ASEAN are concentrated in the Asia Pacific region.

However, RTAs in the 2000s differ from FTAs in the 20th century in that RTAs aim to form economic blocs rather than merely eliminate tariff or non-tariff barriers to the expansion of foreign trade and investment. The formation of economic blocs through RTAs thus has political as well as economic motives. The TPP and RCEP can be thought of as major examples of competition for political influence and prior occupation of markets, where the competing parties are global powers such as the United States, Japan, and China. The structural changes in international trade in the 2000s can also be explained in terms of the “domino effect¹” and the “spaghetti bowl phenomenon².”

As an initial stage analysis of FTA effectiveness in the 21st century, this chapter investigates the effect of ASEAN FTAs on intra-ASEAN trade. Therefore, this chapter analyzes the following effects: 1) Effect of ASEAN FTAs on trade 2) Trade creation or diversion effects.

4.2 Recent Trade Trends associated with ASEAN FTAs

The importance of ASEAN as a trade bloc has grown considerably and ASEAN is currently the third largest such bloc in the world, after the EU and NAFTA. Comprising the Asian Tigers of Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam (the ASEAN 6), together with smaller players such as Brunei, Cambodia, Laos, and Myanmar, ASEAN has a combined GDP of US\$2.31 trillion (2012) and is home to some 600 million people (*Devonshire-Ellis*, 2014).

¹*Baldwin* (1993) insisted that regional trade agreements will expand when FTA member countries realize increased profits through trade creation because economic subjects of countries that are not parties to FTAs press their governments to join existing FTAs or seek new FTAs.

²*Bhagwati et al.* (1998) and *Panagariya* (1999) argued that complex rules of origin and customs procedures due to complicated RTAs overlap with FTAs and hinder their expansion.

The ASEAN bloc has largely cancelled import and export duties on intra-bloc trade. Although Cambodia, Laos, Myanmar, and Vietnam continue to impose nominal duties on certain items, plans exist to completely lift these duties by December 31st, 2015, resulting in the entire region becoming duty free (*Devonshire-Ellis*, 2014). Additionally, ASEAN has entered into a number of free trade and double tax agreements with other free trade regions and countries around the world. Member states of ASEAN have entered into similar agreements. Important among these are agreements with Japan (2008), China (2005), Korea (2007), India (2010), and Australia and New Zealand (2010). Here the years in brackets refer to initial agreements on trade in goods, and some of these agreements are still under negotiation. When negotiations are complete these agreements will create a free trade zone throughout the whole Asian region. However, the strategies of the major ASEAN's FTA partner countries are so different that the economic effects of ASEAN FTAs may be diverse.

Regarding the goals of the Japanese government in relation to the ASEAN's FTA with Japan, Japan has adopted a cautious policy of seeking bilateral economic partnership agreements (EPAs) with ASEAN member countries ³. *Urata* (2005) explained Japan's FTA strategy of establishing FTAs bilaterally with selected members of ASEAN as arising because Japan realized the need to establish agreements with ASEAN countries but felt it could not quickly conclude an FTA with ASEAN because of the large differences in economic and other conditions among ASEAN members. Japan's FTA strategy in relation to ASEAN is demonstrated in the following quote:

While our aim is to ultimately strengthen an economic partnership with ASEAN as a whole, we should, to begin with, rapidly make efforts in creating bilateral economic partnerships individually, based on the frame-

³The Japanese Ministry of Economy, Trade and Industry defined an economic partnership agreement (EPA) as a treaty that provides the following rules to promote trade and investment between specific countries or regions: 1) Eliminating or reducing "tariffs imposed on exports and imports", 2) Reducing and eliminating "regulations on service sectors", 3) Improving investment environments, and 4) Enhancing "protection of intellectual property".

work of the Japan-Singapore economic partnership agreement, with major ASEAN member states (including Thailand, the Philippines, Malaysia and Indonesia) that have expressed a positive interest in concluding a bilateral FTA with Japan. Taking into account the progress of bilateral agreements, we should start a process of expanding those agreements to the one between Japan and ASEAN as a whole (*Ministry of Foreign Affairs of Japan*, 2002).

Meanwhile, China's FTA strategy is based on the two major motivations of enhancing political relations and acquiring energy and raw materials (*Nakagawa and Liang*, 2011). Especially, ASEAN-China FTA (ACFTA) has been regarded as an example of the primacy of geopolitical considerations. *Shen* (2003) pointed out that China granted special preferential tariff treatment to some goods from the less developed ASEAN countries, specifically Cambodia, Laos, and Myanmar, allowing them a further 5 years to enjoy most-favored-nation status while they decided whether to join ACFTA. Many scholars argued that China's FTA negotiations have an explicit political dimension (*Chin and Stubb*, 2008). As a result, ACFTA initially involved only 40% of goods, which were subjected to a reduction in tariffs to 5% or less. Future plans involved extending ACFTA to include trade in goods, services and investment, and the establishment of a free trade zone among the developed ASEAN countries and China by the year 2010, though for the less developed ASEAN countries the deadline was extended to 2015 (*Nakagawa and Liang*, 2011).

Table 4.1: Trends in RTAs in the ASEAN+6 Countries
until 2015

Bilateral FTA	Plurilateral RTA
China-New Zealand (2008)	ASEAN-AFTA (1992)
China-Taiwan (2010)	ASEAN-China (2004)
China-Macao (2004)	ASEAN-Japan (2008)
China-Switzerland (2014)	ASEAN-Korea (2007)
China-Singapore (2009)	ASEAN-India (2010)
China-Iceland (2014)	ASEAN-Australia-New Zealand (2010)
China-Chile (2006)	Korea-EFTA (2006)
China-Costarica (2011)	Korea-EU (2011)
China-Thailand (2003)	SAFTA (1995)
China-Pakistan (2006)	New Zealand-TPP (2006)
China-Peru (2010)	Singapore-EFTA (2003)
China-Korea (2015)	Singapore-GCC (2013)
China-Australia (2015)	Singapore-P4 (2006)
China-Hongkong (2004)	
Japan-Malaysia (2006)	
Japan-Mexico (2012)	
Japan-Vietnam (2009)	
Japan-Brunei (2008)	
Japan-Switzerland (2009)	
Japan-Singapore (2002)	
Japan-India (2011)	

(continued)

Table 4.1 (*Continued*)

Bilateral FTA	Plurilateral RTA
Japan-Indonesia (2008)	
Japan-Chile (2007)	
Japan-Thailand (2007)	
Japan-Peru (2012)	
Japan-Philippines (2008)	
Japan-Australia (2015)	
Korea-Chile (2004)	
Korea-Singapore (2006)	
Korea-India (2010)	
Korea-Peru (2011)	
Korea-US (2012)	
Korea-Turkey (2013)	
Korea-Australia (2014)	
Korea-Canada (2015)	
Korea-New Zealand (2015)	
Korea-Vietnam (2015)	
India-Nepal (1991)	
India-Malaysia (2011)	
India-Butan (2006)	
India-Sri Lanka (2000)	
India-Singapore (2005)	
Australia-New Zealand (1966)	
Australia-Malaysia (2012)	
Australia-US (2005)	

(continued)

Table 4.1 (*Continued*)

Bilateral FTA	Plurilateral RTA
Australia-Singapore (2003)	
Australia-Chile (2009)	
Australia-Thailand (2005)	
Australia-Papua New Guinea (1977)	
New Zealand-Taiwan (2013)	
New Zealand-Singapore (2001)	
New Zealand-Thailand (2005)	
New Zealand-Hong Kong (2011)	
Singapore-Taiwan (2014)	
Singapore-US (2004)	
Singapore-Jordan (2005)	
Singapore-Costa Rica (2013)	
Singapore-Panama (2006)	
Singapore-Peru (2009)	
Thailand-Chile (2015)	
Thailand-Peru (2011)	
Malaysia-Chile (2012)	
Malaysia-Turkey (2015)	
Malaysia-Pakistan (2008)	
Vietnam-Chile (2014)	

Source: WTO, ADB, and Korea International Trade Association (KITA).

Note: FTA, free trade agreement; RTA, regional trade agreement.

4.3 Theoretical Review and Models Related to Trade Effects

Analysis of the economic effects of FTAs can be considered from the perspective of studies conducted by *Viner* (1950). Viner introduced the concept of trade creation and diversion effects that show short term FTA effects between FTA member countries; the trade creation effect is the displacement of less efficient national production in favor of more efficient partner-country production, while the trade diversion effect is the displacement of more efficient non-partner imports in favor of less efficient partner-country sourced imports (*Michael et al.*, 2010). *Meade* (1955), *Lipsey* (1970), *Kemp and Wan* (1976), and *Wonnacott and Wonnacott* (1981) developed Viner's idea of analyzing social welfare effects after RTAs using both theoretical and empirical approaches. However, the issue of whether FTAs (or RTAs) induce trade creation effects rather than trade diversion effects remains under active discussion in academia.

Economists usually attempt trade effect analysis using the Computable General Equilibrium (CGE) model and a gravity model utilizing panel analysis (*Cho and Yoo*, 2007). The CGE model is based theoretically on the neoclassical perspective, which enables the systematic estimation of macroeconomic impacts. The gravity model is based on Newton's law of gravitation, which enables the estimation of partial economic effects using standard statistical methods.

4.3.1 Computable General Equilibrium (CGE) Model

The CGE model is designed to analyze the equilibriums of real economies, and adapts specific assumptions regarding manufacturing technology, preferences, production factors, government economic policies, and so on to a structural equation model that can analyze national economic effects. Therefore, the CGE model does not reflect the real economy, but rather approximates effects on prime factors in the real economy. This model implies the Cobb-Douglas utility function and the CES

utility function in the case of consumers, and the specific production function in the case of manufacturing technologies, and hypothesizes concrete production factors and government economic policies to estimate the economic equilibrium.

Additionally, this model is convertible according to assumptions regarding competition degree, ranging from perfect to imperfect, and can deduce diverse simulation results such as impacts of trade liberalization. However, the more assumptions are considered, the more difficult it becomes to determine the model settings and the more costly the model becomes. Thus, the usual current practice involves models that consider perfect competition and capital accumulation.

The structural basis of the CGE model is the paradigm of the neoclassical school, namely the assumption that every market is perfectly competitive, technologies exhibit production functions that offer constant returns to scale, and each economic subject seeks profit maximization. Thus, when developing the scope of analysis to incorporate international trade, economic changes involving a specific country do not affect other countries because it is assumed that a small country is open.

The initial application of the CGE model to international trade focused on analyses of multilateral trade agreements by linking the CGE model to specific countries. The Michigan Model, designed by Whalley, Deardorff and Stern, is an example of such an analysis model. Integration and localization of the world economy has since come to require quantitative analyses for national policies. The RUNS model, a rural-urban North-South general equilibrium model for analyzing the economic effects of trade liberalization in the agricultural sector, was designed by the OECD and incorporates elements of the Basic Linked System. The GTAP model was developed through extensive discussion to understand the effects of FTAs such as EFTA, NAFTA, and AFTA. Recently, economists have become interested not only in the different economic effects of tax policies, such as indirect tax rates, environmental tax rates, or tariff rates, but also in the indirect effects that arise from interaction

between endogenous policy variables.

An advantage of this CGE model is that it can systematically estimate the economic impacts of changes in government policies. Because the effects of trade liberalization differ among countries, the CGE model is more efficient than the partial equilibrium model. The CGE model can analyze the changes of macro variables such as GDP, price level, or trade balance, as well as analyzing economic activities between economic subjects. However, this model has a disadvantage in that the estimation results cannot be tested statistically and estimators are sensitive to changed parameters. Therefore, a researcher's intuition might interfere with the determination of specific parameter values that should be applied to the CGE model.

4.3.2 Gravity Model and Panel Model

The gravity model is based on Newton's law of gravitation, and applies this concept to national trade volume. According to the model trade between two countries increases in proportion to their national incomes and size and decreases in proportion to the distance between them and hence the transportation costs associated with trade.

The original gravity model shows strong explanatory power for reality, but economists initially ignored it because it contradicted legitimate economic theories, i.e., the Heckscher-Ohlin model. However, *Anderson* (1979) introduced the theoretical background for the gravity model and deduced a gravity equation as a Cobb-Douglas production function. On the coattails of this effort, *Helpman and Krugman* (1985) also deduced a gravity equation from the situation of monopolistic competition that assumes product differentiation, and *Helpman* (1987) proved the situation of monopolistic competition with the gravity model, which was regarded as an appropriate model to explain trade between developed countries with frequent intra-industry trade and monopolistic competition markets.

However, although *Hummels and Levinsohn* (1995) proved the Heckscher-Ohlin model using gravity equations, their research suggested that even in non-OECD countries, i.e., developing countries where a monopolistic competition system has not yet been constructed, the gravity model showed high explanatory power for the estimation of trade patterns. Additionally, in 1988, Deardorff proved that the gravity model can be induced from the Heckscher-Ohlin model, assuming that consumers are indifferent between domestic and foreign goods, producers are indifferent between supplying the domestic market or markets in partner countries, and there is complete specialization. Feenstra, Rose, and Markusen induced the gravity model based on perfect competition and oligopolistic models in 1999, and scholars such as Krugman developed Geographical Economics in the 1990s as a theory of international trade.

Analysis using the gravity model should involve two steps. To estimate the effects of a specific FTA on trade volume, first the regression equation on openness is analyzed, then the effects of openness on income are estimated to assess the spread effects on trade liberalization.

An advantage of this gravity model is that it can be tested using standard statistical methods. However, a disadvantage is that changes in government policies after economic integration mean the model can estimate only certain parts of economic effects.

Panel analysis should be adjusted not only based on the trends and autocorrelation of time series but also based on the heteroscedasticity and multicollinearity of cross sections because panel data consists of both time series and cross section data. Therefore the panel approach has the advantages of reflecting the real economy and compensating for a defect of the CGE model in its inability to be tested statistically as well as having a solid theoretical foundation like the CGE model. Moreover this panel analysis has advantages over the gravity model not only in a lack of restrictions on assumptions but also avoiding problems arising from insufficiency of economic

theory and the measurement of only a limited range of FTA effects.

4.4 Econometric Specifications and Data Sources

4.4.1 Literature Review

Given the rapid expansion of RTAs from 1995, it is natural that numerous studies concerning their effects on foreign trade have been conducted from both theoretical and empirical perspectives (*Urata and Okabe, 2014*). Summarizing the previous research, two routes exist for economic growth through FTAs (*Kim, 2008*). First, by eliminating tariffs FTAs induce increased trade, and ultimately contribute to economic growth through productivity improvement. Second, FTAs encourage economic growth by facilitating the acquisition of advanced technologies through FDI inflows and technical cooperation.

Most academic economists support FTAs based on the positive economic effects associated with increased trade, but controversy persists in relation to the effects of FTAs on FDI inflows and technical cooperation.

Empirical studies on the economic effects of FTAs have usually focused on the concepts of ex-ante evaluation and ex-post evaluation (*Kim, 2008*). Two methods exist for ex-ante evaluation of the FTA effect. One method is CGE model analysis, which is a simulation method as mentioned in section 4.3.1, and the other method is estimation research utilizing the gravity model, as mentioned in section 4.3.2. Both these ex-ante evaluation methods are based on past statistical data. Meanwhile, ex-post evaluation for the FTA effect has usually used panel model analyses, as mentioned in section 4.3.2. The biggest distinction between ex-ante evaluation and ex-post evaluation of the FTA effect involves assumptions regarding the major factors that affect trade. Ex-ante evaluation of an FTA assumes that all variables except tariffs are given, while for ex-post evaluation all the variables are changeable, which means the

analysis must seek to control various causes of change so that only the effects of tariff elimination can be reported.

As for the CGE model analysis, which is an ex-ante evaluation of the FTA, the research of *Scollay and Gilbert* (2001) provides a representative example. *Scollay and Gilbert* (2001) evaluated the economic effects of both existing proposals for new bilateral and multilateral agreements and of more far-reaching developments involving the creation of a substantial trading bloc or blocs in the Asia Pacific region.

For the gravity model analysis, which is another method for ex-ante evaluation of FTAs, *Braga et al.* (1994), *Frankel et al.* (1997), *Baier and Bergstrand* (2007), *Magee* (2008), and *Bae et al.* (2012) evaluated the economic effects of FTAs on trade by incorporating dummy variables into a general gravity model to represent situations where an FTA exists between countries. Especially, *Cernat* (2011), *Magee* (2008), *Plummer et al.* (2010), and *Bae et al.* (2012) estimated trade creation and trade diversion effects by separating economic relationships into those between FTA contracting parties, and those between FTA contracting parties and other parties. *Elliott and Ike-moto* (2004) analyzed the AFTA trade creation effect and suggested that the trade creation effect is expected to become clearer as the trade structure between countries becomes more complementary. *Pitigala* (2005) analyzed the trade creation effect of a South Asian Free Trade Area (SAFTA) and suggested that the trade creation effect increases if the natural trading partner hypothesis is assumed to be correct.

Grossman and Helpman (1995), *Wonnacott* (1996), *Trefler* (2004), and *Urata and Okabe* (2014) can be considered representative studies on ex-post evaluation of FTAs. Especially, *Urata and Okabe* (2014) used panel data and included fixed effects to deal with endogeneity caused by unobserved heterogeneity of country pairs, and attempted to solve the zero trade flow problem. Also, *Baier and Bergstrand* (2007) argued that the most important source of endogeneity problems is omitted variable bias. As a result, it was found that RTAs among developing countries lead to trade diversion for

many products compared to RTAs among developed countries.

The main concern of this chapter is to estimate the effects of ASEAN FTAs on trade volume. The methodology was derived from the gravity model analysis that has usually been applied for ex-ante evaluation of FTAs. This methodology was applied to analyze the impact of FTAs on economic performance in the ASEAN region. Therefore, this chapter presents the results obtained for the influence of ASEAN plurilateral RTAs with six neighboring countries in the Asia Pacific region (China, Japan, Korea, India, Australia, and New Zealand) on trade volume in the ASEAN region. This chapter also presents the main reasons for the change in trade volumes after the RTAs, with a particular focus on trade creation effects versus diversion effects.

4.4.2 Analysis of the Effects of ASEAN FTAs on Trade Flows

In this subsection I present analysis of the effects of ASEAN FTAs on exports, imports, and trade using the gravity model with panel data. In compliance with preceding theoretical and empirical studies suggested above, this research mainly referred to *Elliott and Ikemoto (2004)*, *Magee (2008)*, and *Bae et al. (2012)* in setting up the key regression model.

A basic empirical model can be established using a gravity model as follows; a key variable is the FTA dummy variable which defines whether relations are between ASEAN plurilateral RTA members, and the gravity model analysis includes GDP and distance between countries.

$$\begin{aligned} \ln T_{ijt} = & \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln Distance_{ij} \\ & + \beta_4 ASEANRTAs_{ijt} + \varepsilon_{jt}, \end{aligned} \quad (4.1)$$

where i is whether or not the home country belongs to the ASEAN FTAs, j denotes trade partners of each ASEAN member, and t is the year and ranges from 1988 to 2015. T is export, import, and trade volume at year t ; considering i , j and

t , T_{ijt} is trade volume between countries i and j at time t . $ASEANRTAs_{ijt}$ is a dummy variable that express whether ASEAN plurilateral RTAs (i.e., ASEAN-AFTA, ASEAN-China, ASEAN-Korea, ASEAN-Japan, ASEAN-India, and ASEAN-Australia-New Zealand RTA) are in force between countries i and j at time t .

This regression model was a two-way error component model which is a method of panel data analysis (Hsiao, 2002; Baltagi, 2001; Somaini and Wolak, 2015). This model separates the error term ε_{jt} into the time variant part, group variant part, and the remaining part that cannot be explained using the time variant and group variant parts. Therefore, the error term ε_{jt} can be described as follows:

$$\varepsilon_{jt} = u_j + \mu_t + e_{jt} \quad (4.2)$$

In the formula 4.2, u_j plays a role in controlling non-observable group characteristics, while μ_t plays a role in controlling non-observable time characteristics. In the two-way fixed effect error component model, both u_j and μ_t are regarded as parameters that need estimation. Therefore, the formula 4.1 can be explained by substituting with the formula 4.2 as follows:

$$\begin{aligned} \ln T_{ijt} = & \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln Distance_{ij} \\ & + \beta_4 ASEANRTAs_{ijt} + u_j + \mu_t + e_{jt} \end{aligned} \quad (4.3)$$

To estimate the formula 4.3 as a two-way fixed effect model, two analysis methodologies are usually considered: the first is to estimate the dummy variables as explanatory variables, and the second is to exclude dummy variables through within transformation. This study used the first method, which has an important advantage over the second method in reporting the estimated results for dummy variables.

To construct the model containing group and time dummy variables as explanatory variables, I followed previous studies such as Elliott and Ikemoto (2004), Magee

(2008), and *Bae et al.* (2012), which are representative FTA evaluation studies that use ex-ante evaluation. Therefore, explanatory variables that reflect geographical, cultural, and economic characteristics, as well as year dummy variables were included from the model formula 4.3.

$$\begin{aligned}
 \ln T_{ijt} = & \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln Distance_{ij} \\
 & + \beta_4 ASEANRTAs_{ijt} + \sum_{k=1}^7 \gamma_k Region_j + \gamma_8 Inland_j + \gamma_9 Adj_{ij} \\
 & + \delta Comlang_{ij} + \lambda BiFTAs_{ijt} + \sum_{t=1988}^{2015} \tau_t Year_t + e_{jt},
 \end{aligned} \tag{4.4}$$

where $Region_j$ is a continental dummy variable that represents East Asia and the Pacific, Latin America, the Middle East and North Africa, North America, South Asia, Sub-Saharan Africa, or Europe and Central Asia. $Inland_j$ indicates landlocked countries. Adj_{ij} is a dummy variable specifying whether countries i and j share a common border. $Comlang_{ij}$ is a dummy variable that represents countries i and j share a common language. $BiFTAs_{ijt}$ shows economic relations between countries, such as ASEAN bilateral FTAs, but excludes the ASEAN plurilateral RTAs, its purpose being to obtain more unbiased and efficient analysis results for the ASEAN plurilateral RTA effects after controlling for bilateral FTAs involving the ASEAN member countries.

4.4.3 Data Sources and Descriptive Statistics

The data set used for this study comprises a panel constructed from country-pairs representing the relationships between eight ASEAN countries⁴ and 194 trade partner countries, covering 28 years from 1988 to 2015. Bilateral trade data are taken from the UN Comtrade Database developed by the United Nations. GDP data are taken from the World Bank Open Databases published by the World Bank. RTA dummy

⁴Laos and Myanmar were excluded because of a lack of data.

variables are created based on information for the year of establishment of the RTA, obtained from the websites of the WTO, ADB, and KITA. Regional information such as continental features and bilateral distances are taken from the World Bank and Time and Date AS websites. Cultural information on common language is taken from the Centre D’Etudes Prospectives (CEPII) and Wikipedia.

Table 4.2: Data Sources

Variable	Source
Trade (US\$)	UN: UN Comtrade Database
GDP (Current US\$)	World Bank: the World Bank Open Databases
RTAs	WTO, ADB, and KITA
Bilateral Distance (kilometer)	Time and Date AS (http://www.timeanddate.com)
Regions	World Bank: Annual Report 2012, 2013
Languages	CEPII and Wikipedia

Table 4.3 presents summary statistics used in this empirical study to represent the economic effect of ASEAN plurilateral RTAs on trade flows. Among the trade data, zero trade values are observed as the minimum, but this study sought to employ the country pair fixed effect estimation in accordance with empirical studies suggested above, such as *Elliott and Ikemoto* (2004), *Magee* (2008), and *Bae et al.* (2012). Especially, *Magee* (2008) argued that fixed effect estimations capture the determinants of trade flows normally included in gravity model specifications and control for yearly shocks to national trade. Moreover, controlling for the fixed effects generally reduces the estimated trade impacts of regional agreements, which enables researchers to acquire significant anticipatory effects on trade flows and continues to affect trade for up to 11 years after regional agreements begin⁵.

⁵Meanwhile, *Urata and Okabe* (2014) conducted an ex-post study through product-level analysis using a panel comprised of 20 products for 67 countries/regions over 27 years from 1980 to 2006. They argued that a new research method, namely the Poisson pseudo-maximum likelihood (PPML) model, is required to deal with the zero trade flow problem for ex-post study by providing a product-level analysis on the trade creation and diversion effects of regional trade agreements. However, because ASEAN plurilateral RTAs remain at an early stage, ex-ante study such as trade flow analysis, which shows trade patterns and estimated elasticities for country pairs from a perspective of fixed effect analysis, is thought to be more appropriate. However, to deal with zero trade values I conducted

Table 4.3: Summary Statistics

Variable	Obs	Mean	SD	Min	Max
Export	27,441	5.63e+08	2.64e+09	0	5.15e+10
Import	27,441	5.16e+08	2.50e+09	0	4.96e+10
Trade	27,441	1.08e+09	4.94e+09	1	9.59e+10
B_GDP	27,441	1.83e+11	1.83e+11	3.65e+09	9.18e+11
P_GDP	26,750	3.00e+11	1.21e+12	1.09e+07	1.80e+13
Distance	27,441	9,683.0	4,613.6	315	19,816
ComLang	27,441	0.16	0.37	0	1
ASEANRTAs	27,441	0.06	0.24	0	1
Inland	27,441	0.18	0.38	0	1
Adj	27,441	0.01	0.11	0	1
BiFTAs	27,441	0.01	0.11	0	1

Source: Author's calculation.

4.5 Empirical Results

4.5.1 The Empirical Results for the Effect of ASEAN FTAs on Trade Flows

To analyze the effect of ASEAN plurilateral RTAs on trade flows, a basic panel regression method reflecting the gravity model was adopted. In this panel regression analysis, economic effects by the country variables, which were not chosen with random sampling, are major considerations. The direction of this analysis implies that the fixed effect method is assumed; the fixed effects panel approach permits the determination of causation under weaker assumptions than those of cross-section analysis, but still requires assumptions, i.e., the unobservables α_i are time-invariant, rather than being of the more general form α_{it} , which shows that an advantage of the fixed effect method is to report a consistent estimator thanks to the elimination of heterogeneity between groups (*Cameron and Trivedi, 2005*). Therefore, when considering

panel Tobit model analysis, which was suggested from one of the aforementioned FTA evaluation studies such as *Bae et al. (2012)*. As a result, estimation results for the panel Tobit model analysis did not show significant results.

the two-way fixed effect model, it can be a challenge to obtain regression results for the major qualitative variables; a recommended solution is to control the error terms for both cross-section and time-series (*Somaini and Wolak, 2015*).

Table 4.4 presents the estimation results for an economic effect of ASEAN plurilateral RTAs on trade flows, which followed an analysis of the two-way fixed effect model. At first, the variables of GDP and distance show consistent estimators with significant explanatory powers, which theoretically match the gravity model and follow previous research.

With regard to geographical, cultural, economic effects on ASEAN trade, trade activities were negatively affected in cases where a partner country was landlocked, and positively affected in cases involving neighboring countries. Additionally, ASEAN trade is focused on East Asia and the Pacific relative to other continental regions. Moreover, trade increased significantly where partner countries shared a common language. Furthermore, RTAs of ASEAN countries positively influenced ASEAN trade.

As for the ASEAN plurilateral RTA effect, only imports were positively affected where ASEAN plurilateral RTAs were in effect with partner countries relative to where no such RTAs were in effect. For the AFTA effect, only imports were positively affected ASEAN member countries. Among the countries with which ASEAN has signed RTAs, Korea showed the strongest ASEAN trade effect, but for Japan and China, ASEAN plurilateral RTAs did not positively increase trade flows. Australia, New Zealand, and India showed no significant trade effects after concluding their ASEAN RTAs, but the ASEAN-Australia-New Zealand RTA and the ASEAN-India RTA have not been in effect for long.

However, for the ASEAN bilateral FTA effect, the results show positive signs significantly among exports, imports, and total trade. These empirical results suggest that ASEAN countries currently utilize bilateral FTAs more effectively than ASEAN

plurilateral RTAs for their economic competitiveness and new growth opportunities.

Table 4.4: Effect of ASEAN FTAs on Trade Flows

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	lnExport	lnImport	lnTrade	lnExport	lnImport	lnTrade
lnBGDP	1.568*** (0.016)	1.366*** (0.016)	1.612*** (0.014)	1.568*** (0.016)	1.364*** (0.016)	1.611*** (0.014)
lnPGDP	0.959*** (0.006)	1.219*** (0.008)	1.030*** (0.006)	0.962*** (0.006)	1.223*** (0.009)	1.033*** (0.006)
lnDistance	-0.949*** (0.038)	-0.987*** (0.048)	-0.945*** (0.037)	-0.925*** (0.041)	-0.950*** (0.054)	-0.919*** (0.041)
ASEANRTAs	0.030 (0.067)	0.304*** (0.077)	0.057 (0.065)			
AFTA				0.092 (0.079)	0.394*** (0.094)	0.125 (0.077)
RTAAUS				0.035 (0.214)	-0.458*** (0.119)	-0.291 (0.177)
RTANZL				-0.014 (0.220)	0.444*** (0.144)	0.121 (0.172)
RTAIND				0.167 (0.199)	0.526*** (0.127)	0.025 (0.186)
RTAKOR				0.297** (0.139)	0.894*** (0.109)	0.481*** (0.132)
RTAJPN				-0.464** (0.186)	-0.973*** (0.131)	-0.690*** (0.167)
RTACHN				-0.692***	-0.353***	-0.518***

(continued)

Table 4.4 (Continued)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	lnExport	lnImport	lnTrade	lnExport	lnImport	lnTrade
				(0.100)	(0.117)	(0.116)
BiFTAs	1.189*** (0.096)	1.026*** (0.077)	1.012*** (0.089)	1.244*** (0.106)	1.186*** (0.077)	1.108*** (0.096)
Inland	-1.306*** (0.037)	-0.686*** (0.048)	-1.026*** (0.036)	-1.302*** (0.037)	-0.682*** (0.048)	-1.023*** (0.036)
EAsiaPac	1.211*** (0.052)	1.159*** (0.076)	1.333*** (0.053)	1.236*** (0.053)	1.196*** (0.079)	1.356*** (0.054)
LaAmeCa	0.363*** (0.046)	-0.149** (0.058)	0.228*** (0.044)	0.354*** (0.047)	-0.166*** (0.060)	0.216*** (0.045)
MEastNAf	0.397*** (0.045)	0.371*** (0.060)	0.515*** (0.045)	0.404*** (0.045)	0.382*** (0.060)	0.522*** (0.045)
NAmerica	1.097*** (0.083)	0.151*** (0.055)	0.782*** (0.069)	1.075*** (0.083)	0.116** (0.057)	0.758*** (0.070)
SAsia	0.595*** (0.071)	-0.518*** (0.083)	0.421*** (0.064)	0.616*** (0.074)	-0.487*** (0.088)	0.449*** (0.068)
SubSaAf	0.514*** (0.041)	0.428*** (0.053)	0.466*** (0.040)	0.520*** (0.041)	0.437*** (0.053)	0.472*** (0.041)
Adj	0.960*** (0.089)	0.824*** (0.108)	0.963*** (0.088)	0.963*** (0.088)	0.813*** (0.108)	0.959*** (0.088)
ComLang	0.546*** (0.040)	0.432*** (0.048)	0.443*** (0.039)	0.544*** (0.040)	0.429*** (0.048)	0.442*** (0.039)
year	yes	yes	yes	yes	yes	yes
Constant	-37.256***	-38.657***	-40.896***	-39.882***	-39.056***	-41.180***

(continued)

Table 4.4 (Continued)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	lnExport	lnImport	lnTrade	lnExport	lnImport	lnTrade
	(0.534)	(0.649)	(0.539)	(0.567)	(0.686)	(0.561)
Observations	25,720	24,623	26,750	25,720	24,623	26,750
R-squared	0.683	0.633	0.715	0.683	0.633	0.715

Note: Robust standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.5.2 Trade Creation and Diversion Effects

The trade creation effect refers to an increase in trade of a parent country as a result of increased price or non-price competitiveness, while the trade diversion effect denotes the post-FTA substitution of imports from FTA partner countries for imports from third countries. To analyze trade creation and diversion effects after the implementation of ASEAN plurilateral RTAs (i.e., ASEAN-AFTA and ASEAN Plus RTAs) since 1988, this study sought to apply a methodology to adopt intra and extra RTA dummy variables in the Gravity model (*Cernat, 2011; Magee, 2008; Plummer et al., 2010; Bae et al., 2012; Urata and Okabe, 2014*). Therefore, the ASEAN RTA dummy variables, i.e., intra-ASEAN RTA dummy variables, that capture the trade creation effect are the same as used in the aforementioned formula 4.1, while the non-ASEAN RTA dummy variables, i.e., extra RTA dummy variables, capture trade diversion and equal unity when the importer country belongs to the ASEAN RTAs but the exporter country does not. If the coefficients are negative and significant, this indicates that imports from a non-member country decrease as a result of the

ASEAN RTAs. The formula 4.5 presents an extension of the formula 4.4.

$$\begin{aligned}
\ln M_{ijt} = & \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt} + \beta_3 \ln Distance_{ij} \\
& + \beta_4 RTA_{ijt} + \beta_5 NonRTA_{ijt} \\
& + \sum_{k=1}^7 \gamma_k Region_j + \gamma_8 Inland_j + \gamma_9 ADJ_{ij} + \delta Comlang_{ij} \\
& + \lambda BiFTAs_{ijt} + \sum_{t=1988}^{2015} \tau_t Year_t + e_{jt},
\end{aligned} \tag{4.5}$$

where M_{ijt} is import volume to country j from country i at time t , RTA_{ijt} is a dummy variable that shows countries i and j are both AFTA or ASEAN Plus RTA member countries at time t , $NonRTA_{ijt}$ is a dummy variable that shows both countries i and j are not members of AFTA or of ASEAN Plus RTAs at time t , and other regional, cultural, bilateral FTA variables have the same notations as the formula 4.4.

Table 4.5 presents the estimation results of the trade and diversion for the AFTA and ASEAN plurilateral RTAs. After analyzing the coefficient signs for the AFTA and ASEAN plurilateral RTA countries, as well as the non-AFTA and the non-ASEAN plurilateral RTA countries, the trade diversion effect is stronger than the trade creation effect for the AFTA and ASEAN plurilateral RTA countries⁶. The ASEAN plurilateral RTAs have induced the substitution effect, causing imports from non-ASEAN RTA countries to decrease significantly relative to those from ASEAN RTA countries. Additionally, GDP between the two countries and regional variables were estimated reasonably so that the signs of the coefficients matched the ordinary Gravity model analysis; especially, trade effects showed a more positive influence because the relationships between the two countries are adjacent and use common languages, whereas the trade effect showed a negative influence because the two countries are

⁶According to the F-test to determine whether the coefficients (i.e., Intra AFTA vs. Extra AFTA, and Intra ASEAN plurilateral RTA vs. Extra ASEAN plurilateral RTA in Table 4.5) are equal to each other, it was difficult to accept the null hypothesis at the 1% level of significance.

Table 4.5: Trade Creation or Diversion Effects of the AFTA and ASEAN RTAs

VARIABLES	(1) lnImport	(2) lnImport	(3) lnImport	(4) lnImport
lnBGDP	1.367*** (0.016)	1.365*** (0.016)	1.367*** (0.016)	1.366*** (0.016)
lnPGDP	1.204*** (0.007)	1.222*** (0.008)	1.192*** (0.007)	1.219*** (0.008)
lnDistance	-1.266*** (0.031)	-0.948*** (0.053)	-1.217*** (0.030)	-0.987*** (0.048)
Intra AFTA	-34.550*** (0.545)	-38.656*** (0.653)		
Extra AFTA	-35.636*** (0.564)	-39.060*** (0.681)		
Intra ASEAN plurilateral RTA			-34.566*** (0.541)	-38.353*** (0.637)
Extra ASEAN plurilateral RTA			-35.793*** (0.555)	-38.657*** (0.649)
Inland		-0.684*** (0.048)		-0.686*** (0.048)
EAsiaPac		1.192*** (0.073)		1.159*** (0.076)
LaAmeCa		-0.169*** (0.059)		-0.149** (0.058)
MEastNAf		0.381*** (0.060)		0.371*** (0.060)
NAmerica		0.121** (0.057)		0.151*** (0.055)
SAsia		-0.470*** (0.087)		-0.518*** (0.083)
SubSaAf		0.434*** (0.053)		0.428*** (0.053)
Adj		0.804*** (0.108)		0.824*** (0.108)
ComLang		0.430*** (0.048)		0.432*** (0.048)
BiFTAs		1.113*** (0.074)		1.026*** (0.077)
year	no	yes	no	yes
Observations	24,623	24,623	24,623	24,623
R-squared	0.975	0.976	0.975	0.976

Note: Robust standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

landlocked. Furthermore, ASEAN trade activities tended to be more focused in East Asia and the Pacific than in other economic regions.

4.6 Conclusion and Implications

This research investigated the impacts of ASEAN plurilateral RTAs on trade flows, with a particular focus on their creation and diversion effects, by applying the gravity model to estimate trade volume for 194 countries/regions over 28 years from 1988 to 2015. The core finding of this FTA evaluation study is that ASEAN plurilateral RTAs have affected trade flows less than ASEAN bilateral FTAs, but have had an even clearer trade diversion effect, which has led to the substitution effect.

Previous studies help clarify why ASEAN FTAs have had this strong trade diversion effect. *Urata and Okabe* (2014) found that RTAs among developing countries result in trade diversion compared with RTAs among developed countries; this result suggests that high tariffs imposed on imports from non-members by developing countries could be a primary cause of trade diversion. Their study was based on analysis from AFTA, a trade bloc established by the ASEAN nations to support local manufacturing in all developing countries within the bloc. Therefore, consistent with their study, this research shows more definitely why the trade diversion effect appears in the case of developing countries. If this matter is considered from a broader perspective than that of AFTA or ASEAN bilateral FTAs, namely from the perspective of plurilateral RTAs comprising developing and developed countries, the reason for the trade diversion can be seen to originate from developing countries regardless of their trade partners.

Additionally, it was found that the effectiveness of the ASEAN plurilateral RTAs on trade flows can differ according to the motivations of the governments of the countries involved. The ASEAN-China and ASEAN-Japan RTAs appeared less effective than the ASEAN-Korea RTA. According to previous studies on the ASEAN FTA

strategies of these governments, China has tended to pursue political goals rather than simply pursuing economic efficiency (*Nakagawa and Liang, 2011*), while Japan has sought to prioritize the expansion of bilateral economic partnerships with individual ASEAN countries over a partnership with ASEAN as a whole (*Ministry of Foreign Affairs of Japan, 2002*). However, this evaluation study on ASEAN plurilateral RTAs is thought to have implications for the importance of national willingness to undertake further efforts in directly involved countries to increase efficiency by lifting trade restrictions rather than political strategic considerations for the timings of FTA formations. Analysis of the effects of the Japan-ASEAN FTA requires considering not only plurilateral ASEAN RTAs with Japan but also bilateral ASEAN FTAs (EPAs) with Japan. Furthermore, we must remember that care is needed not to create divisiveness in relationships with ASEAN (*Urata, 2005*).

Furthermore, it is noteworthy that the trade of the ASEAN countries tends to be more focused on East Asia and the Pacific than other continental regions. In considering RTA formation centered on Asia, this economic affinity is thought to be a crucial motivation that helps overcome the economic and cultural diversity among the Asia Pacific countries. *Frankel and Rose (1996)* suggested that intensity of bilateral trade and correlation of business cycle are crucial criteria for the formation of a common currency area, and *Rose and van Wincoop (2001)* showed empirical results that support the ability of currency unions to lower these monetary barriers to trade, increasing trade and welfare.

The results of this study are useful because they suggest implications for the effectiveness of ASEAN plurilateral RTAs still in an early stage on the economic performance of ASEAN countries. Previous studies tended to focus on AFTA evaluation, and thus this research can offer an introductory analysis of ASEAN plurilateral RTAs. Regarding further studies, more specific FTA evaluation studies such as an ex-post evaluation using product-level trade data are expected to be conducted to facilitate

deeper discussions on Asian economic integration and development.

CHAPTER V

An Empirical Analysis of ASEAN's FTA Effects on Inward FDI to ASEAN

5.1 Introduction for the issue of ASEAN's FTA effects on FDI

In 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 in 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), where the United States takes the initiative, and Regional Comprehensive Economic Partnership (RCEP), where China plays a leading role, can be the recent major examples of RTA, which endeavor to promote political and economic blocs. Meanwhile, Japan, Korea, 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 RTAs with neighboring 6 countries: China, Japan, Korea, India, Australia, and New Zealand, and has internally sought for integration with the world economy exceeding 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 reflect the rise in intra-regional trade and investment over time in this region, which promotes to achieve a position as a representative production networks and clusters in Asia (*Lee and 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 the sustainable economic growth of the world. This chapter aims to analyse an economic effect of ASEAN’s FTA on inward foreign direct investment (FDI) to 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 chapter is organized as follows. In Section 5.2, the recent trend of FDI flows to ASEAN is described. In Section 5.3, previous theoretical and empirical studies related to FDI incentives are reviewed. Section 5.4 provides an econometric model and expected hypothesis for the effect of ASEAN plurilateral RTAs on FDI. Section 5.5 presents empirical results from the regression analysis and investigates how ASEAN plurilateral RTAs influenced on FDI. Section 5.6 discusses the international economic implications of ASEAN plurilateral RTAs and offers concluding remarks.

5.2 The Recent Trend of FDI flows into the ASEAN

While regional integration among ASEAN member countries has been instrumental, attracting FDI to this region has emerged not as a result of the larger market of this integrated region but more from the differences of factor endowment of member countries and from home countries' supporting policy (*Pananond, 2008*). The ASEAN member countries agreed the AFTA in 1992. In addition to the attempts of trade liberalization, ASEAN also endeavored to open up foreign investment conditions through the establishment of the ASEAN Investment Area (AIA) by 2010 and the AEC by 2015. As a result, the FDI flows into the ASEAN has sharply surged recently; in 2005, FDI flows into the ASEAN was USD 43,325 million, while the size of FDI inflows increased by approximately 4 times up to USD 168,714 million in 2014 (see Table 3.5 in Chapter III).

International investment in ASEAN is expanding, but there are wide discrepancies across ASEAN in member states' performance in attracting FDI (*OECD, 2014*). Therefore, the OECD divided ASEAN for their researches into the following four groups:

< Singapore >

Singapore is often the first choice as a location by a wide margin. For most OECD members, more than one half of the total stock of investment is in Singapore.

< Thailand, Malaysia, and Indonesia >

Different OECD countries have different preferences in terms of ranking, but the three countries are almost always the most important after Singapore.

< the Philippines and Vietnam >

both populous countries but with less appeal to OECD investors than the more developed ASEAN members. Affiliates in these two economies tend to be more export-oriented. The Philippines has attracted substantial US investment in call centres serving the US market. Viet Nam is the first choice of Korean investors, suggesting that their investment strategy in the region is strongly export-oriented. Viet Nam is the fourth destination worldwide for Korean investors, with 8,000 projects worth almost USD 10 billion.

< Cambodia, Laos, and Myanmar >

Cambodia, Laos, and Myanmar which together generally receive under 10% of total OECD investment in the region. Given their wealth of mineral and water resources and a pool of relatively cheap labour, much of the investment in these markets is likely to be export-oriented in the medium term, although Myanmar offers long-term potential as a market in itself.

As the size of foreign investment becomes large and the feature of ASEAN economies are diversified, the motivations of foreign investment of the MNCs become more complicated. Especially, Japan's systematic investment activities are impressive. Japan has traditionally maintained strong relationships with the ASEAN countries, and a lot of MNCs from Japan possess production facilities and sufficient supply chain in this region; *Kabe et al.* (2012) presented that share of outward FDI from Japan toward the ASEAN was 11% in 2011, which was higher ratio compared to other major countries except Korea, e.g., the US's investment in ASEAN was 4%, the EU's investment in ASEAN was 2%, and China's investment in ASEAN was 5%. In addition, *Ito* (2013) showed that RTAs, such as the ASEAN or NAFTA, drives horizontal

export-platform-type FDI, whereas bilateral FTAs induce vertical export-platform type FDI, using Japan's firm-level FDI data. *Urata* (2015) found that Japanese firms have the major motivations to undertake export production in developing countries, whereas to expand local sales in developed countries.

In this chapter, with a regional concept after ASEAN plurilateral RTAs, how investment motivations and incentives of the MNCs have changed in ASEAN region was investigated with more consistent and efficient statistic estimators. In addition, compared to previous FDI studies which tend to be focused on advanced economies, it is one of major characteristics that this study endeavored to have a perspective from developing economies.

5.3 Theoretical Background and Previous Empirical Studies

5.3.1 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). The lasting interest implies the existence of a long-term relationship between the direct investor and the enterprise and a significant degree of influence by the direct investor on the management of the enterprise. 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 revolve 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; thus, many cases of horizontal FDI show that MNCs establish production bases in a host country and they tend to concentrate on taking charge in business administration. 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 different 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. Thus, the vertical FDI framework is like a developed source country and a developing host country (*Reinert et al., 2009*). 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 and 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 eliminate trade barriers; firms can take advantage of production bases in a host country for reducing costs which are generated from 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, 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; for example, customs levy on the transactions of raw and intermediary goods induces to raise the cost of production. 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; reduction of transaction cost can motivate firms to increase the incentive for 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; it is because FTA usually demands institutional change and legal reformation to increase mutual profits on the same conditions with two or more other countries that have economic interests, which are ultimately favorable for the investment environment. 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 implementation.

In addition, an integrated treatment of horizontal Direct Investment and vertical Direct Investment was developed in 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 the 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.

5.3.2 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 based on individual firms' activities. 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-intensive goods tend to be exported from capital-abundant countries to capital-scarce and labor-abundant countries. In

addition, macroeconomic analysis have been usually conducted with aggregate capital and trade data reflecting 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; thus, this suggested that MNCs have a greater interest in market access than reducing production costs. *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 and 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 and 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 coun-

tries (*Moon and 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 country, and more openness (or dependence upon trade) raise FTA effectiveness on FDI greatly; the first property supports horizontal FDI while the latter two properties support vertical FDI. 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, and thus these incentives induced to reduce FDI between developed countries. *UNCTAD (1998)* pointed that the general effect of BIT on FDI inflows in host countries are not significant, but only in case of underdeveloped countries, the 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 suggest that there is a positive relationship between FTA (or BIT) and FDI. *Egger and 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 and Miroudot (2006)* showed that the combination of RTA and BIT jointly influence on trade and investment more significantly. When it comes to NAFTA, FTA have 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 is concerned, it is notable that ASEAN's efforts

to raise productivity and efficiency have been systematized, e.g., AEC and ACIA are introduced in Section 5.1, while investment flows into ASEAN keep on increasing and become more diversified. *Urata and Ando* (2011) pointed out the need for further liberalization of FDI policies and promotion of facilitation measures for ASEAN countries, and argued that ASEAN needs to utilize various existing frameworks such as FTAs, BITs, and ACIA. *Uttama* (2005) found that MNCs activities in ASEAN from 1983-2003 had been generally shown as the horizontal characteristics, while the recent FDI patterns in ASEAN are considered with more various ways, i.e. from horizontal and vertical FDI to export platform and complex vertical FDI (*Uttama and Peridy*, 2009)¹. Finally, with respect to the studies of FTAs, *Thangavelu and 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 and Sasuya*, 2007).

5.3.3 Differentiation from Preceding Researches

The present study aims to show how much ASEAN plurilateral RTAs impacted on inward FDI to this region. 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's FTA effect on FDI, empirical analysis with aggregate data of ASEAN has 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.

¹Export 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. *Mota and Norman* (1996) found that improved market access within a trade block lead to third-country effects; their research suggests that ASEAN economic integration enables foreign MNCs to establish affiliates in one of ASEAN countries with an excellent investment climate such as Singapore and to sell their products manufactured in the host country to other ASEAN countries with lower trade transaction costs.

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 inward investment 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 plurilateral RTAs on inward FDI to this region is suggested reflecting industrial development stages of each ASEAN countries².

5.4 Conceptual Framework and Hypothesis

5.4.1 Main Regression

In compliance with preceding theoretical and empirical studies suggested above, this research mainly referred to *Egger and Pfaffermayr* (2004), *Uttama and Peridy* (2009), and *Jang* (2011) in setting up the key regression model. *Egger and 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. *Uttama and Peridy* (2009) endeavored to investigate the current FDI patterns in ASEAN using an applied knowledge-capital model which include third-

²The present study categorized the industrial development stages of ASEAN countries reflecting the degrees of industrialization and foreign competitiveness, which was applied from the measurement method by *Joo et al.* (2011), i.e., i) diversified economy, ii) ongoing industrialization economy, iii) incipient industrialization economy, iv) preindustrial economy, and v) resource-rich economy.

Table 5.1: Economic Diversity of ASEAN Member Countries in the year 2012

Measure	Singapore	Thailand	Malaysia	Philippines
Ease of Doing Business (Rank)	1	17	18	136
Portion of Manufacture & Service (%)	93.7	78.1	73.4	77.5
GDP per capita (constant 2005 US\$)	36,483	3,334	6,841	1,512
GDP Growth (annual %)	3.41	6.49	5.64	6.8
Measure	Indonesia	Brunei	Vietnam	Cambodia
Ease of Doing Business (Rank)	129	83	98	138
Portion of Manufacture & Service (%)	63.7	39.9	59.1	56.1
GDP per capita (constant 2005 US\$)	1,715	25,361	986	674
GDP Growth (annual %)	6.03	0.94	5.25	7.31
Measure	Laos	ASEAN	EU	NAFTA
Ease of Doing Business (Rank)	165	87	40	23
Portion of Manufacture & Service (%)	44.3	63.3	89.1	83.4
GDP per capita (constant 2005 US\$)	725	8,626	30,007	30,300
GDP Growth (annual %)	8.02	5.55	-0.49	2.75

Note: Myanmar is excluded in the table due to the lack of information.

Source: World Bank, Doing Business 2012, the World Bank Open Databases.

country effect. *Jang* (2011) also adopted the knowledge-capital model to the empirical analysis for an impact 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 follows:

$$\begin{aligned}
\ln(FDI)_{ijt} = & \beta_0 + \beta_1 HGDP_{it} + \beta_2 SIM_{ijt} + \beta_3 |\Delta SK_{ijt}| + \beta_4 MP_{it} + \\
& \beta_5 OPEN_{it} + \beta_6 HGDP_{it} \cdot |\Delta SK_{ijt}| + \beta_7 |\Delta SK_{ijt}| \cdot DIST_{ij} + \\
& \beta_8 ASEANRTAs_{ijt} + \beta_9 RTA_{ijt} \cdot DIST_{ij} + \beta_{10} RTA_{ijt} \cdot |\Delta SK_{ijt}| + \\
& \beta_{11} RTA_{ijt} \cdot MP_{it} + \beta_{12} BIT_{ijt} + \beta_{13} BiFTAs_{ijt} + \mu_{ij} + \varepsilon_{ijt}
\end{aligned} \tag{5.1}$$

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

As for the independent variables, $HGDP_{it}$ is the economic size of the host countries, SIM_{ijt} is bilateral similarity in economic size between host i and parent j in year t . $|\Delta SK_{ijt}|$ and MP_{it} represent relative factor endowments differences and market potential, respectively. $OPEN_{it}$ and $DIST_{ij}$ represent trade openness of host country i in year t and geographical distance between i and j . $ASEANRTAs_{ijt}$ is the dummy variable which represents whether ASEAN plurilateral RTAs are in force between i and j countries in year t , while BIT_{ijt} is also the dummy variable which represents whether BIT comes into effect between i and j countries in year t . $BiFTAs_{ijt}$ is the dummy variable which represents whether bilateral FTA is in force between i and j countries in year t . μ_{ij} is the country-pair fixed effects.

This set of bilateral determinants was calculated as follows: $HGDP_{it} = \ln(GDP_{it})$ measures the economic size of ASEAN host countries. $SIM_{ijt} = \ln[1 - \{GDP_{jt}/(GDP_{it} + GDP_{jt})\}^2 - \{GDP_{it}/(GDP_{it} + GDP_{jt})\}^2]$ captures the bilateral similarities in economic size between ASEAN host countries and parent countries of the world in year t . $|\Delta SK_{ijt}| = |\ln(\text{percapita GDP}_{jt}) - \ln(\text{percapita GDP}_{it})|$ reflects the production cost difference between countries. $MP_{it} = (\ln GDP_{it} - \ln TARIFF_{ijt})$ is the ratio of GDP to tariffs as a proxy variable for market potentials, which implies the rise to an increase in market potential of ASEAN countries by an reduction in tariffs after an economic integration ³. $OPEN_{it} = \ln\{(Export_{it} + Import_{it})/GDP_{it}\}$ denotes trade openness of ASEAN countries i in year t .

5.4.2 Expected Hypothesis for Economic Effects of FTA on FDI

Expected signs of the theoretical model are summarized in Table 5.2. Specific hypotheses for this analysis were suggested as follows.

<Hypothesis 1> Economic size is positively associated with horizontal and export

³For the tariff information, it is more desired to use bilateral tariff information that well reflects FTA situations, but this study utilized MFN tariff information following the previous studies.

platform FDI.

<*Hypothesis 2*> Economic similarity is positively associated with horizontal and export platform FDI.

<*Hypothesis 3*> The difference of relative factor endowments is positively associated with vertical FDI.

<*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 ($HGDP_{ijt}$) is expected to have positive relationships with inward horizontal and export platform FDIs to ASEAN; increased size of economy offers positive incentives to MNCs from parent countries for capturing the market. Bilateral similarity in economic size (SIM_{ijt}) is expected to have positive relationships with inward horizontal and export platform FDIs to 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 although the vertical firms are usually indifferent to the market size of the host 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 inward vertical FDI to ASEAN countries, while the effect of an increase of relative factor endowments on horizontal FDI will be negative because major factor of an increase of relative factor endowments can be not only an increase of GDP per capita of parent countries but also a decrease of GDP per capita of host countries; if GDP per capita of host countries decreases, horizontal FDI which is sensitive to marketability is affected to be decreased. In addition, if relative factor endowments are decreased due to the rise of productivity in host countries; this also implies an increase of GDP per capita of host countries in this formula, 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 case of the relative factor endowments. The relationship between Market potential (MP_{it}) and FDI is undetermined; If an increased factor of the market potential relies on an increase of GDP in a host country, there is positively relationship with horizontal FDI and there is less impact on vertical FDI, but if an increase factor of the market potential relies on a decrease of transaction cost such as tariffs in a host country, there is negative relationship with horizontal FDI and there is an incentive to increase vertical FDI. Trade openness ($OPEN_{it}$) is expected to have positive relationship with horizontal, export platform, and vertical FDIs; economic atmosphere of a host country where is favorable to market-opening provides positive encouragement for MNCs of a parent country to invest their knowledge-based assets in the host country.

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

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

At first, the effect of FTA on inward FDI to host countries is different according to the investment types and economic situations of host countries. The effect of FTA on vertical FDI 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 a host country. Meanwhile, FTA effect on horizontal FDI can be negative; the horizontal firms replace foreign investments with trade transactions because of the relatively increased initial fixed costs in a host country after FTA. However, if considering more fundamental role of FTA to change the international trade environment

and economic system in host countries, FTA can induce to raise inward horizontal FDI to host countries; especially, the degree of market environment improvement through FTA is expected to be more increased in an economic community formed by developing countries such as ASEAN rather than developed countries. Therefore, the effect of FTA on each types of inward FDI to host country is undetermined theoretically, but the effect can be positive considering the relationships with vertical, export platform, and horizontal flows, i.e., not only the decreased transaction and production costs but also the market environment improvements can be expected to increase FDI in a host country after FTA.

For the interaction term of FTA and distance ($RTA_{ijt} \cdot Dist_{ij}$), 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 ($RTA_{ijt} \cdot Dist_{ij}$) and horizontal FDI is expected to show positive sign; after FTA is in force, 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 ($RTA_{ijt} \cdot |\Delta SK_{ijt}|$) is expected to show positive relationship with vertical FDI; after FTA, vertical firms will be more motivated to take advantage of a comparative advantage of factor endowments. However, the relationship between this interaction term ($RTA_{ijt} \cdot |\Delta SK_{ijt}|$) and horizontal FDI is expected to show 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 ($RTA_{ijt} \cdot MP_{it}$) 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 is in force, horizontal firms will be more motivated to replace foreign investments with trade transactions. However, the relationship between the interaction term ($RTA_{ijt} \cdot MP_{it}$) 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 investments into the host country.

Table 5.2: Expected Signs of the Theoretical Model

Independent Variables	Horizontal FDI	Export Platform FDI	Vertical FDI
$HGDP_{it}$	+	+	0
SIM_{ijt}	+	+	-
$|\Delta SK_{ijt}|$	-	+/-	+
MP_{it}	+/-	+/-	+/-
$OPEN_{it}$	+	+	+
$HGDP_{it} \cdot |\Delta SK_{ijt}|$	+/-	+/-	+/-
$|\Delta SK_{ijt}| \cdot Dist_{ij}$	+	+	-
$ASEANRTAs_{ijt}$	+/-	+	+
$RTA_{ijt} \cdot Dist_{ij}$	+	+	-
$RTA_{ijt} \cdot |\Delta SK_{ijt}|$	-	+	+
$RTA_{ijt} \cdot MP_{it}$	-	+	0
BIT_{ijt}	+	+	+

5.4.3 Data Sources and Descriptive Statistics

Data sources which were used for the empirical analysis in the present study were summarized in Table 5.3. The data was collected with a view of the host position which receives the foreign investment from the parent countries for 12 years annually

(2001–2012). Bilateral FDI Data was utilized with country-level value of FDI from the parent countries to the host ASEAN countries⁴. Macro economic variables were transformed from nominal values into real values. Laos, Myanmar, and Brunei were excluded in this empirical analysis; there were a lot of missing values in the data for the bilateral FDI, gross domestic product, and tariff information.

Table 5.3: Data Sources

Variable	Source
Bilateral FDI (instock US\$)	UNCTAD, Bilateral FDI Statistics 2014
GDP (Current US\$)	World Bank Open Databases
Per capita GDP (Current US\$)	World Bank Open Databases
GDP deflator (%)	World Bank Open Databases
Trade openness	World Bank Open Databases
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 (http://www.timeanddate.com)

Descriptive statistics for key variables were summarized in Table 5.4. The samples were divided with three groups based on the industrial development stages of ASEAN countries: full sample, diversified economy, ongoing industrialization economies, and incipient industrialization economies. There are something peculiar in the statistics, i.e., the mean of skill difference in the group of diversified economy present 0.77, which is much lower than 2.22 in ongoing industrialization economy and 2.88 in incipient industrialization economy. 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

⁴UNCTAD provides bilateral FDI flow and stock data. For this short term study, it may be proper to utilize a flow variable. However, to maintain consistency with most previous studies, the present study also utilized bilateral FDI stock values (*Yeyati et al.*, 2003; *Egger and Pfaffermayr*, 2004; *Leshner and Miroudot*, 2006; *Uttama and Peridy*, 2009; *Jang*, 2011). Furthermore, for this empirical study, it was hard to utilize the ASEAN's FDI flow data sufficiently because there were a lot of missing values.

in Section 5.3, and reflects the reality of the world FDI flows⁵, i.e., foreign investment tends to be transferred from the capital-abundant countries to other capital-abundant or labor-abundant countries with the purpose of greater market access or reducing production costs. In addition, this differentiation in skill difference of the diversified economies compared to other groups in ASEAN suggests that economic effects of ASEAN's FTA on FDI may be diverse even among the ASEAN member countries.

Table 5.4: Descriptive Statistics for Key Variables

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skew</i>	<i>Kurt</i>	<i>Med</i>
<i>Full Sample (2,916 obs.)</i>							
$\ln IFDI_{ijt}$	13.68	2.54	7.9	19.94	-0.5	2.32	13.75
$HGDP_{it}$	20.74	1.27	17.63	22.21	-1.29	3.49	21.14
SIM_{ijt}	-1.89	1.25	-7.16	-0.69	-1.35	4.62	-1.5
$|\Delta SK_{ijt}|$	2.32	1.34	0	5.19	-0.15	1.89	2.46
MP_{it}	19.83	2.82	14.11	34.33	1.01	5.35	19.74
$OPEN_{it}$	4.82	0.61	3.82	6.09	0.43	2.65	4.83
$Distance_{ij}$	8.73	0.82	5.75	9.87	-1.33	4.39	9.03
$Tarif f_{ijt}$	0.93	2.23	-13.65	5.58	-2.46	9.68	1.59
$HGDP_{it} \cdot |\Delta SK_{ijt}|$	47.5	26.61	0.01	95.72	-0.3	1.8	52.05
$|\Delta SK_{ijt}| \cdot Dist_{ij}$	20.45	12.27	0	47.62	-0.05	1.87	21.42
$ASEANRTAs_{ijt}$	0.19	0.4	0	1	1.54	3.38	0
$RTA_{ijt} \cdot Dist_{ij}$	1.47	3	0	9.18	1.59	3.6	0
$RTA_{ijt} \cdot |\Delta SK_{ijt}|$	0.33	0.85	0	4.35	2.78	10.16	0
$RTA_{ijt} \cdot MP_{it}$	4.05	8.03	0	30.5	1.54	3.54	0

⁵Jang (2011) also pointed out the relatively small average value for the skill difference^(continued) of the intra-OECD country pair, which was similar to the values obtained by Egger and Pfaffermayr (2004).

Table 5.4 (Continued)

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skew</i>	<i>Kurt</i>	<i>Med</i>
BIT_{ijt}	0.39	0.49	0	1	0.46	1.21	0
$BiFTAs_{ijt}$	0.05	0.22	0	1	4.18	18.44	0
<i>Diversified Economies (420 obs.)</i>							
$\ln IFDI_{ijt}$	13.3	2.15	8.44	18.04	0.22	2.57	13.19
$HGDP_{it}$	21.14	0.34	20.64	21.67	0.07	1.72	21.17
SIM_{ijt}	-1.49	0.79	-4.16	-0.69	-1.02	3.48	-1.26
$|\Delta SK_{ijt}|$	0.77	0.95	0	3.99	1.73	5.05	0.37
MP_{it}	25.16	2.57	18.63	34.33	0.64	3.87	24.72
$OPEN_{it}$	5.96	0.07	5.87	6.09	0.36	1.75	5.94
$Distance_{ij}$	8.83	0.85	5.75	9.84	-1.83	6.54	9.18
$Tarif_{ijt}$	-4.04	2.61	-13.65	2.13	-0.62	3.77	-3.71
$HGDP_{it} \cdot |\Delta SK_{ijt}|$	16.19	20.05	0.01	86.55	1.73	5.08	7.72
$|\Delta SK_{ijt}| \cdot Dist_{ij}$	6.36	7.48	0	33.26	1.72	5.27	3.36
$ASEANRTAs_{ijt}$	0.15	0.36	0	1	1.91	4.64	0
$RTA_{ijt} \cdot Dist_{ij}$	1.16	2.74	0	9.05	2	5.18	0
$RTA_{ijt} \cdot |\Delta SK_{ijt}|$	0.3	0.84	0	3.99	2.69	8.94	0
$RTA_{ijt} \cdot MP_{it}$	4.36	9.31	0	28.5	1.68	3.85	0
BIT_{ijt}	0.29	0.45	0	1	0.94	1.88	0
$BiFTAs_{ijt}$	0.21	0.41	0	1	1.43	3.04	0
<i>Ongoing Industrialization Economies (1,152 obs.)</i>							
$\ln IFDI_{ijt}$	14.33	2.52	8.36	19.94	-0.11	2.22	14.44
$HGDP_{it}$	21.21	0.34	20.63	21.79	-0.04	2.04	21.19
SIM_{ijt}	-1.56	0.92	-5.53	-0.69	-1.38	5.15	-1.22
$|\Delta SK_{ijt}|$	2.22	0.98	0.01	4.22	-0.38	2.33	2.37

(continued)

Table 5.4 (Continued)

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skew</i>	<i>Kurt</i>	<i>Med</i>
MP_{it}	19.86	1.15	15.59	28.01	2.24	11.71	19.7
$OPEN_{it}$	4.79	0.32	4.17	5.35	-0.38	2.35	4.84
$Distance_{ij}$	8.65	0.87	5.75	9.77	-1.28	4.05	9.02
$Tariff_{ijt}$	1.35	1.09	-7.05	5.58	-2.35	13.33	1.51
$HGDP_{it} \cdot |\Delta SK_{ijt}|$	46.98	20.58	0.19	87.24	-0.43	2.35	50.6
$|\Delta SK_{ijt}| \cdot Dist_{ij}$	19.57	9.35	0.07	40.18	-0.21	2.2	20.78
$ASEANRTAs_{ijt}$	0.22	0.41	0	1	1.35	2.82	0
$RTA_{ijt} \cdot Dist_{ij}$	1.65	3.13	0	9.18	1.4	3.03	0
$RTA_{ijt} \cdot |\Delta SK_{ijt}|$	0.31	0.71	0	3.31	2.43	8.1	0
$RTA_{ijt} \cdot MP_{it}$	4.51	8.37	0	28.01	1.33	2.82	0
BIT_{ijt}	0.44	0.5	0	1	0.26	1.07	0
$BiFTAs_{ijt}$	0.04	0.2	0	1	4.7	23.09	0
<i>Incipient Industrialization Economies (1,344 obs.)</i>							
$\ln IFDI_{ijt}$	13.08	2.58	7.9	19.32	-0.11	2.17	13.46
$HGDP_{it}$	20.21	1.7	17.63	22.21	-0.29	1.44	20.32
SIM_{ijt}	-2.29	1.46	-7.16	-0.69	-0.93	3.16	-2.03
$|\Delta SK_{ijt}|$	2.88	1.3	0.01	5.19	-0.59	2.23	3.23
MP_{it}	18.66	2.57	14.11	30.5	0.68	4.39	18.84
$OPEN_{it}$	4.49	0.44	3.82	5.09	-0.22	1.35	4.68
$Distance_{ij}$	8.77	0.77	6.28	9.87	-1.16	3.69	9.03
$Tariff_{ijt}$	1.63	1.38	-8.73	4.03	-3.53	20.15	1.84
$HGDP_{it} \cdot |\Delta SK_{ijt}|$	57.74	25.2	0.15	95.72	-0.75	2.28	67.93
$|\Delta SK_{ijt}| \cdot Dist_{ij}$	25.6	12.03	0.06	47.62	-0.49	2.14	28.87
$ASEANRTAs_{ijt}$	0.19	0.39	0	1	1.62	3.62	0

(continued)

Table 5.4 (Continued)

<i>Variable</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Skew</i>	<i>Kurt</i>	<i>Med</i>
$RTA_{ijt} \cdot Dist_{ij}$	1.4	2.95	0	9.13	1.65	3.79	0
$RTA_{ijt} \cdot |\Delta SK_{ijt}|$	0.37	0.95	0	4.35	2.78	9.82	0
$RTA_{ijt} \cdot MP_{it}$	3.58	7.38	0	30.5	1.66	4.04	0
BIT_{ijt}	0.38	0.48	0	1	0.51	1.26	0
$BiFTAs_{ijt}$	0.01	0.08	0	1	12.1	147.34	0

5.5 Empirical Results

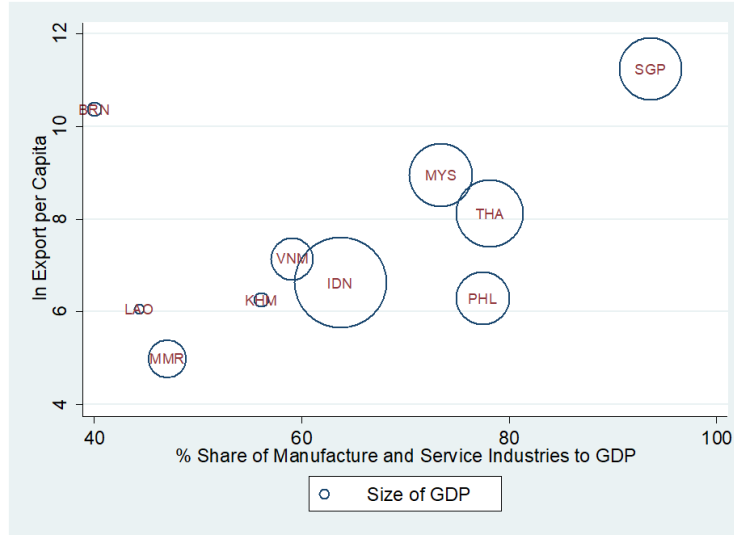
5.5.1 A Classification based on Industrial Development Stages of ASEAN Countries

In this subsection, before discussing with the estimation results for inward FDI to ASEAN countries, how ASEAN countries are classified based on the economic characteristics of industrial structures is presented.

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 globalization in the world.

Figure 5.1 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 the export per capita. Table 5.5 classified the industrial development stages of ASEAN countries with five groups. A broad range of economic diversity is observed as a major feature of ASEAN economy.



Source: Author Calculation with World Bank and UN Comtrade Data.

Figure 5.1: Economic Diversity of the ASEAN Member Countries

5.5.2 Estimation Results and Analysis

The regression analysis was conducted with a method of panel data analysis; the panel data analysis enables researchers to estimate more efficient estimators because panel data usually provide a number of data points, increasing the degrees of freedom and reducing the collinearity among explanatory variables (*Hsiao, 2002*). Therefore, to control unobserved heterogeneity, country-pair effects were adopted in the model for the present panel analysis; *Hummels and Levinshon (1995)* introduced the country-pair fixed and random effects for their panel data analysis, and *Egger and Pfaffermayr (2003)* emphasized the necessity of individual country-pair dummies to

Table 5.5: Diversity of Economic Structure among the 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 seiveice 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: The results are based on around the year of 2012.

mitigate the problem of estimation bias on panel estimators. In addition, the present study endeavored to reflect the diversity of economic structures in ASEAN countries so that more realistic FDI trends after FTA implementation can be investigated.

Table 5.6 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 whole 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 models⁶.

Major estimation results for an economic effect of ASEAN plurilateral RTAs on FDI was analyzed as follows. Mainly by interpreting the interaction terms, it is possible that major trends of inward FDI to ASEAN and changes in FDI patterns can

⁶For the incipient industrialization economy, the estimation results were reported based on less robust standard error. In case that the regression results were obtained with robust standard error, F-statistic for this regression model could not be calculated because of insufficient rank to perform the model test. However, the explanatory powers of coefficients for less robust standard error were not changed so much compared to those for robust standard error.

be observed based on the time when ASEAN RTAs were in force. Major estimation results indicated that responses of FDI to ASEAN RTAs were diverse by industrial development stages although all of the target countries for this study are in the same region and economic community, i.e., the ASEAN.

First of all, the result of overall ASEAN countries are suggested in column (1) of Table 5.6. Summarizing variables with high explanatory power and their signs, *Openness* and *HGDP* were effective at the 1% level of significance, and the positive signs were reported. As for the coefficient of *ASEANRTAs*, ASEAN RTAs were effective at the 10% level of significance, and the positive sign was presented. However, *RTA_MP* was effective at the 5% level of significance, but the negative sign was reported. Analyzing the results based on the previous theoretical and empirical studies, as suggested in Section 5.3, the positive sign for the coefficient of *Openness*, which represents the variable as economic openness, suggests that economic openness has a positive influence on inward FDI to ASEAN. The positive sign for the coefficient of *HGDP*, which indicates the income levels of ASEAN, suggests that a rise in ASEAN incomes positively contributed to inward FDI to ASEAN. In addition, the positive sign for *ASEANRTAs* suggests that ASEAN RTAs were beneficial for inward FDI to ASEAN. Meanwhile, *RTA_MP* implies an influence of the market potentials of ASEAN on inward FDI to ASEAN, but the negative sign for the coefficient of *RTA_MP* was reported; this result can be interpreted as that an influence on ASEAN market after ASEAN RTAs has been decreased. In other words, the present study shows that ASEAN RTAs contributed on inward FDI to ASEAN, while decreasing the incentives to horizontal FDI but increasing considerably the incentives to vertical FDI, when considering both of the variables *ASEANRTAs* and *RTA_MP*.

However, when classifying ASEAN countries with the industrial development stages, which are suggested in the columns from (2) to (4) of Table 5.6, the changes

in motives for FDI 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 that bilateral similarity in economic size between Singapore and other parent countries has negative relationship with inward FDI to Singapore. Meanwhile, the effect of ASEAN RTAs on inward FDI to Singapore was not significant. If referring to the previous theoretical and empirical analysis results, the negative sign for the coefficient of *SIM* implies 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 a major type of FDI in Singapore which was classified in the group of diversified economy, which also meets the standards of the World Bank as high-income economies and the IMF as advanced economies. However, it was the same feature in that an economic effect of ASEAN RTAs was not significant in Singapore. Singapore has already promoted foreign investment-driven policy before ASEAN RTAs were in force, and thus the role of ASEAN's FTA seems to be ancillary to Singapore. It can be regarded that this result is congruent with previous studies which claim that FTA itself is a supporting role because FDI is mainly associated with increase in size of the market and different factor proportions.

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 *ASEANRTAs*, ASEAN RTAs were effective at the 10% level of significance, and the negative sign was presented. However, *RTA_MP* was effective at the 5% level of significance, and the positive sign was reported. Analyzing these results, in case of the group of ongoing industrialization

economy in ASEAN, economic openness has contributed considerably on FDI, 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 RTAs on FDI was negative; it can be understood that in Thailand, Malaysia, and the Philippines, horizontal FDI had been mainly interested, but after ASEAN RTAs were in force, the firms replaced foreign investments with trade transactions. However, it is noticeable that an influence of market potentials after ASEAN RTAs has increased. This means that ASEAN RTAs negatively influenced on horizontal FDI, but export platform FDI, which is usually interested in third-country FDI, was motivated as a newly pattern of FDI in ASEAN region after ASEAN RTAs were in force.

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 *ASEANRTAs*, ASEAN RTAs were effective at the 1% level of significance with positive sign, and *FDI_Dist* was also significant at 1% level with the negative sign. *RTA_SK* was significant at 10% level with the positive sign. If analyzing these estimation results, it was definite that both horizontal and vertical FDIs have been brought into the group of 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, and *SK* representing relative factor endowments differences has contributed on vertical FDI. Meanwhile, in that the coefficient of *ASEANRTAs* was significant at 1% level with the positive sign, it is decided that ASEAN RTAs have greatly influenced on inward FDI to the group of incipient industrialization economies in ASEAN. In particular, it turned out that vertical FDI has been motivated after ASEAN RTAs were in force, based on the interpretation with the signs of coefficients for *RTA_Dist* and *RTA_SK*.

These estimation results suggest that an influence of distance on FDI was negative but an influence of the relative factor endowments differences on FDI was positive after ASEAN RTAs were in force; vertical firms establish a new plant in a host country to minimize costs and to maximize a comparative advantage of factor endowments for manufacturing products in a host country, thus long distance is a negative factor and relatively great endowments difference is positive factor when entering a host country.

Table 5.6: Empirical Analysis Result

VARIABLES	(1)	(2)	(3)	(4)
	Overall ASEAN	Diversified ASEAN Economy	Ongoing Industrializa- tion Economy	Incipient Industrializa- tion 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)

(continued)

Table 5.6 (Continued)

VARIABLES	(1)	(2)	(3)	(4)
	Overall ASEAN	Diversified ASEAN Economy	Ongoing Industrializa- tion Economy	Incipient Industrializa- tion Economy
SK_Dist	0.327 (0.377)	-0.122 (0.240)	0.565 (0.491)	0.381* (0.211)
ASEANRTAs	4.267* (2.344)	-4.399 (7.948)	-6.827* (3.549)	12.172*** (3.300)
RTA_Dist	-0.281 (0.290)	0.646 (0.869)	0.146 (0.201)	-1.411*** (0.418)
RTA_SK	0.033 (0.073)	0.085 (0.097)	-0.166 (0.141)	0.233* (0.140)
RTA_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)
BiFTAs	-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

(continued)

Table 5.6 (Continued)

VARIABLES	(1) Overall ASEAN	(2) Diversified ASEAN Economy	(3) Ongoing Industrializa- tion Economy	(4) Incipient Industrializa- tion Economy
R-squared	0.130	0.331	0.231	0.252
F-test (FE or Pooled OLS)	109.08***	—	127.45***	60.06***
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***	82,614***	210,000***

Note: Robust standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

5.6 Conclusion and Implications

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

This study has suggestions to policy makers and corporate investors in the world. First, ASEAN foreign policies including ASEAN RTAs tend to pursue to give a beneficial effect especially on inward vertical FDI to this region, which is compared to previous studies for the patterns of outward FDI to developed countries where FDI incentives tend to be focused on capturing markets. Furthermore, third-country effects such as export platform FDI were detected, which shows the corporate intentions to utilize the increasing ASEAN market potentials after ASEAN plurilateral RTAs were in force. Although much more still seems to remain to be done for further liberalization of ASEAN FDI policies (*Urata and Ando, 2011*), corporate investors in source countries which joined in ASEAN RTAs need to pay more attentions to ASEAN's efforts on "a single market and production base in ASEAN" through AEC or ACIA.

Meanwhile, one of important findings that the results of this study suggest is that FTA itself is an ancillary role to support fair and predictable investment-related

institutions, thus 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 can be used and maximized for FDI facilitations. For further studies, more specific ideas of how factor proportions can be diversified and maximized more concretely and how potential market demands of host countries can be explored would seem to be required to be developed.

CHAPTER VI

Official Development Assistance, Foreign Direct Investment, Exports, and Economic Growth in Major ASEAN Countries

6.1 Introduction for the issue of ASEAN Economic Growth and Investment Sources as a Foreign Exchange

This chapter provides empirical results and implications for the collective causal relationships between GDP and investment sources as foreign exchange in ASEAN NICs, employing VAR, and panel VAR models. In previous studies reported by *Hsiao and Hsiao* (2006) and *Won and Hsiao* (2008), it is uncovered that their use of fixed and random effects model is not a suitable empirical strategy for estimating the causal effect of exports and FDI on GDP. In addition, the ODA inflow should preferably have been included in the causality analyses of their studies. Evidence from a panel VAR model estimated on the dataset of GDP, FDI, exports, and ODA, suggests a statistically significant long-run effect of investment sources as foreign exchange on GDP.

The history of the economic growth of East Asian countries in the last 60 years has demonstrated the growth potential of developing countries and provided many in-

sights into development economics. In particular, Korea, Japan, Taiwan, Hong Kong, Singapore, Malaysia, Thailand, and Indonesia are regarded as high-performing Asian economies (HPAEs) and they are referred to as the East Asian miracle (*MacDonald et al.*, 1993; *Stiglitz and Yusuf*, 2001). The HPAEs overcame the devastation following the second World War, where their reconstruction was based on industrialization. At present, China and India have important roles as manufacturing bases with vast labor pools in world industries but they are also emerging markets.

Between 1967 and 2013, the national income per capita increased more than 15-fold in all HPAEs, and the real average economic growth exceeded more than 4% in each decade after 1960, except in Japan, which exceeded the world average¹. The HPAEs have also been successful at income distribution. The average Gini coefficient has been 0.4 since 1980, which is lower than that for other countries where the unequal distribution of income varies between 0.5 to 0.75 (*Campos and Root*, 1996). On average, life expectancy increased from 59.6 years in 1961 to 78.5 years in 2012 in all HPAEs, and the average adult literacy rate also rose from 76.9% in the 1980s to 95.1% in the 2010s among ASEAN HPAEs (Singapore, Malaysia, Thailand, and Indonesia). Since 1950, Korea, Singapore, Taiwan, and Hong Kong (four Asian tigers) have achieved notable economic reforms, where the drastic surge in national income per capita changed their status from less developed countries into advanced economies in 1997 (*IMF*, 1997, 2014). China, India, Indonesia, Malaysia, Thailand, and the Philippines are considered to be newly industrialized countries (NICs) among the Asia economies in the late 20th and early 21st centuries(*Bożyk*, 2006; *Guillén*, 2003).

Economic growth has been one of the most important research issues, but identifying the factors that contribute to economic growth is still difficult (*Easterly*, 2002). Economists have proposed various theories² and performed empirical studies, but the

¹The average national income per capita, Gini coefficient, life expectancy, and adult literacy rates in HPAEs were calculated based on the World Development Indicators database for 2014.

²Todaro, Michael and Stephen Smith (2011) suggested representative and historical theories for development economics as follows: (1) linear-stages-of-growth model, (2) theories and patterns of

neoclassical economic growth model has mainly been utilized in economic studies. Neoclassical economists have emphasized the liberalization (opening up) of national markets because it draws domestic and foreign investment, thereby increasing the rate of capital accumulation. This neoclassical perspective can be traced back to the Harrod–Domar growth model, which considers the importance of saving and investing a specific portion of GDP for economic growth (*Stern*, 1991). The Harrod–Domar growth model was developed into the Solow neoclassical growth model (*Hagemann*, 2009). Solow introduced a growth model with diminishing returns for each capital and labor factor during production but constant returns to scale for both factors jointly. Technological progress provides an exogenous explanation of how the residual factor generates long-term economic growth. The Solow neoclassical growth model differs from the Harrod–Domar growth model because the latter model includes a fixed coefficient and an assumption of constant returns to scale. Solow emphasized that efficiency as well as both human and physical capital inputs are important for economic growth (*Solow*, 1956), and he also suggested that simply increasing labor and capital is not the key to economic growth.

There have been many debates about whether the dramatic economic growth in East Asia is a miracle or a myth based on the Solow growth model. World Bank reports indicate that the keys to rapid economic growth were fundamentally sound development policy, private domestic investment, and rapidly growing human capital (*MacDonald et al.*, 1993). This suggests that the economic success of the East Asian miracle was a result of both productivity and efficiency. By contrast, some economists have argued that the rapid growth in Asia was driven by labor and capital inputs rather than gains in efficiency (*Krugman*, 1994). Krugman proposed that the growth in East Asian countries is comparable to that of the Soviet Union in its high-growth era, and that there is insufficient evidence of improvements in efficiency and tech-

structural change, (3) the international-dependence revolution, and (4) the neoclassical, free-market counterrevolution.

nical progress in the Asian tigers, especially Singapore. However, *Bhagwati* (1996) highlighted the outward orientation of East Asian economies, such as their export promotion strategy, which is distinct from the import substitution strategy in India or the Soviet Union. Thus, the growth of export earnings could have led investment with increasing imports of capital equipment, which embodies technical change. *Nelson and Pack* (1999) stated that capital accumulation was an important source of growth, but its productive assimilation was a critical component of the Asian Miracle. They also suggested that policy needs to ensure that potential business leaders are ready to enter a new field of technology. *Stiglitz* (1996) and *Stiglitz and Yusuf* (2001) emphasized that the Asian Miracle was the result of the appropriate coordination role of governments, such as efficient industrial and export-oriented policy, or cooperative but competitive relationships with business sectors without collusion, which can also encourage sustainable development, i.e., urbanization, egalitarian income distribution, or education policies. *Khandke* (2007) claimed that capital and labor investments as well as the roles of institution and governance are important for the sustainable growth of Asian economies.

Based on these opinions of Asian economic growth, I aimed to determine how investment sources such as foreign exchange (i.e., export earnings, foreign direct investment (FDI), and official development assistance (ODA)) have contributed to economic growth. Previous studies of the Asian Miracle have tended to focus on the four Asian tigers, which have been treated as advanced economies by the IMF since 1997, although other Asian countries were studied in their analyses. In addition, one of the most distinct foreign economic policies of successful Asian countries is their external opening policy, including their export promotion strategy. Considering these previous academic opinions of policy directions in Asian economies, it is necessary to analyze international economies by treating investment sources as foreign exchange by NICs among Asian countries rather than HPAEs. The progressiveness of NICs compared

with the Asian Tigers and the preparations required by underdeveloped countries that are trying to overcome poverty can be important for sustainable economic growth and development.

In addition, the relationships between GDP growth and investment sources as foreign exchange in ASEAN countries need to be considered in a bidirectional manner. According to the new growth theory, FDI is considered to have a permanent growth effect through capital accumulation but also via technology transfer and spillover. However, considering that FDI inflows will be increased to the growing economies and markets, the causality of FDI and economic growth should be analyzed in a bidirectional manner. Furthermore, FDI can increase the export earnings of developing countries through exports of intermediary goods, and exports give investors information about the market situation, thereby affecting FDI inflow to the developing countries. ODA is also accepted as having a crucial role in filling the savings gap and increasing economic growth in poor countries, where the relationship between ODA and FDI can be regarded in terms of the “vanguard effect³” and the “information effect⁴.”

Therefore, the aim of this study was to investigate the causal relationships between GDP, exports, FDI, and ODA among the ASEAN NICs, i.e., Malaysia, Thailand, and the Philippines. Causality was analyzed simultaneously using time series and panel data, thereby avoiding endogeneity in the econometric models, which is challenging, based on vector autoregressive (VAR) analysis as well as system GMM for the panel VAR.

The remainder of this chapter is organized as follows. In Section 6.2, previous theoretical and empirical studies of the causal relationships among GDP, exports, FDI, and ODA are reviewed. Section 6.3 presents the causal effects analysis based

³In particular, *Kimura and Todo* (2010) suggested that aid from a donor country tends to promote FDI from the same donor.

⁴*Mody et al.* (2003) suggested that the private and concealed information of recipient countries may be revealed by foreign aid, which helps investors to collect data for investment purposes.

on individual ASEAN NICs time-series data utilizing the VAR approach. Section 6.4 presents the causal effects analysis based on ASEAN NICs panel data utilizing system GMM. Each of these sections provides a discussion of the empirical analysis results. In Section 6.5, the principal results are summarized and policy implications are discussed.

6.2 Previous Theoretical and Empirical Studies

Most recent studies have examined bivariate relationships empirically between GDP and exports, GDP and FDI, FDI and exports, and ODA and FDI. Trivariate analyses (GDP, exports, and FDI) have also been performed, but few studies have analyzed causality simultaneously using panel data. However, the results of these studies are difficult to accept given that consistent estimators have been reported. Previous studies have employed fixed and random panel estimates, but the methods were not suitable for excluding endogeneity from the models, including lag variables for dependent variables among the explanatory variables. Furthermore, considering that ODA is one of the crucial international sources of finance⁵ and that it has effects on GDP, FDI, and exports, as noted in Section 6.1, then it would be better to include the effects of ODA in simultaneous analyses with the GDP, exports, and FDI variables. Before discussing recent studies of trivariate causality analyses, historical studies and their implications are considered to be helpful for understanding this causality analysis between investment sources, such as foreign exchange and GDP growth. Thus, representative bivariate studies are described as follows.

For the export-growth nexus, *Frankel and Romer (1999)* demonstrated that trade appears to raise income by promoting the accumulation of physical and human cap-

⁵*Lessard and Williamson (1987), Pool et al. (1998), Todaro and Smith (2011)* introduced 1) export earnings, 2) FDI inflow, 3) ODA inflow, 4) portfolio investment, and 5) remittance from abroad as positive factors in the balance of payments, where exports, FDI, and ODA were regarded as the major exchange currency inflows related to economic growth in developing countries.

ital, as well as by increasing output for given levels of capital, thereby suggesting the endogenous characteristics of trade. *Brunner* (2003) indicated that trade has a large and significant effect on the level of income, whereas the effect on income growth is small or non-robust. *Baldwin* (2003) noted that general economic openness is much more favorable for long-run growth than an inward-looking policy stance, but he emphasized the need for a stable and non-discriminatory exchange rate system, prudent monetary and fiscal policies, and the corruption-free administration of economic policies. *Rodriguez* (2007) showed that growth does not have a significant positive correlation with trade. *Gervais* (2015) supported *Frankel and Romer* (1999) by using a new instrument constructed based on consistent and unbiased estimates of the impact of geography on bilateral trade.

For the FDI-growth nexus, *de Mello, Jr.* (1997) defined FDI as a composite bundle of capital stocks, know-how, and technology, and thus it is expected to have an impact on growth, but the importance of efficiency spillovers to domestic firms were also noted. *Fan* (2003) agreed that FDI has been beneficial for capital formation, output and income generation, and export growth in China, but it was also suggested that relatively little advanced technology has been transferred. Thus, the FDI tended to focus on real estate, commerce, tourism-related industry, and labor-intensive industry. *Alfaro* (2003) showed that the total FDI had an ambiguous effect on growth, where the FDI tended to have a negative effect on growth in the primary sector but a positive effect on investment in manufacturing. The results of a bivariate causality analysis by *Chowdhury and Mavrotas* (2006) suggested that GDP had a causal effect on FDI in Chile but not vice versa, whereas bidirectional causality was detected between GDP and FDI in Malaysia and Thailand. *Alfaro et al.* (2010) quantified how the increase in FDI led to higher growth rates in financially developed host countries compared with developing host countries, and found larger growth effects when goods were substitutes rather than complements.

For the FDI-export nexus, *Markusen and Venables* (1998) employed a competitive model between multinational and national firms using an industrial structure process. *Zhang* (2005) mentioned that China's success in promoting exports through FDI has contributed to national policies, host government bargaining power relative to multinational corporations, and geographical advantages. *Cho* (2013) suggested that the causal relationship between trade and FDI in both countries can be formed by long-term economic exchange rather than a short-term surge in scale.

For ODA and its efficiency, *Chenery and Carter* (1973) compared cases of accelerated growth and retarded growth. Thus, Korea and Thailand were successful in accelerating exports over capital inflows, whereas India and Columbia failed because they relied excessively on import substitution and there was little consideration of export promotion or diversification, thereby implying that capital inflow and better internal management were the principal sources of improvements. Based on a causality analysis, *Dawson and Tiffin* (1999) showed that aid did not stimulate India's economic development or hinder it. *Boone* (1995) suggested that elitist and liberal regimes were the best predictors of the impact of foreign aid rather than egalitarian and laissez-faire regimes. *Arellano et al.* (2009) warned of the "Dutch disease" effect, where aid could increase the supply of tradable goods but reduce the price of non-tradable goods, thereby discouraging productive investment. *Markandya et al.* (2010) found that aid volatility was negatively correlated with economic growth in the long run and they suggested that low-income countries with weak institutions can benefit from being better prepared for volatility. *Arndt et al.* (2015) showed that aid has over the past 40 years stimulated growth, promoted structural change, improved social indicators, and reduced poverty. *Lof et al.* (2015) argued that panel VAR model is proper to analyze the long-run effect of aid on income.

With respect to the ODA-FDI nexus, *Svensson* (2000) considered how rent-seeking activities might arise when local governments or firms compete for rents from foreign

aid but without productive spending. *Harms and Lutz* (2006) found that foreign aid could be beneficial when the recipient countries were well equipped with rigid institutions, thereby attracting FDI, which is known as the “infrastructure effect.” *Arazmuradov* (2012) showed that ODA and FDI had significant positive bidirectional causality in Central Asia, where FDI complemented domestic investment but ODA decreased domestic investment. In addition, for the ODA-export nexus, *Feasel* (2014) demonstrated that ODA caused exports from Japan and France, whereas the other direction was suggested for the UK⁶.

From a methodological viewpoint, representative previous studies that performed causality analysis with panel data to analyze Asia’s economic growth are as follows. *Hsiao and Hsiao* (2006) employed fixed and random effects analysis to analyze FDI, exports, and GDP in East and Southeast Asia. *Won and Hsiao* (2008) applied a similar method to *Hsiao and Hsiao* (2006) for the analysis of ANIEs, i.e., Korea, Taiwan, Singapore, China, Malaysia, the Philippines, and Thailand. However, some issues should be considered regarding the construction of their econometric model and the econometric results obtained. They highlighted some positive characteristics of panel data analysis, which can alleviate the heterogeneity within groups and time-series. This makes sense for the overall panel analysis, but caution is recommended when adjusting for the fixed and random effects analysis. The fixed and random effects analysis requires the elimination of correlations between explanatory variables and the error term u_i , which reflects the characteristics of time-invariant panel data. However, the panel models used in their causality study were not constructed in this manner. Thus, care should be taken to ensure that the lagged variables of dependent variables are present in each of the explanatory variables. The group heterogeneity problem may be alleviated by estimating fixed and random effects, but instrument

⁶*Feasel* (2014) considered the ODA-export nexus based on parent countries, whereas the present study analyzed major ASEAN NICs based on host countries, with a causal relationship between ODA inflow and the export earnings of the host countries.

variable estimation is required to solve the problem of endogeneity that occurs due to the inevitable correlation between explanatory variables and the error term e_{it} , which includes the characteristics of time-varying panel data⁷.

In addition, the ODA inflow should preferably have been included in the causality analyses of both *Hsiao and Hsiao* (2006) and *Won and Hsiao* (2008) regarding ASEAN NICs. The ODA inflow in developing countries has played a crucial role in their GDP growth and the ODA inflow has bidirectional causal relationships with other investment sources as foreign exchange, such as FDI and export earnings, as demonstrated by theoretical⁸ and empirical studies, including the aforementioned studies.

Based on previous research, I performed an economic growth causality analysis of ASEAN NICs as follows.

6.3 Causal Effect Analysis of Individual ASEAN NICs: VAR

A causality analysis between GDP and investment sources as foreign exchange (i.e., export earnings, FDI, and ODA) was conducted for individual ASEAN NICs (i.e., Malaysia, the Philippines, Thailand) using a time-series VAR approach based on an assumption of contemporaneous correlation, but autocorrelation and cross-correlation were not permitted. The VAR analysis was conducted using statistically stationary time-series datasets based on the differences between consecutive logarithmic values. Using the results, Granger causality tests were performed between GDP, exports, FDI, and ODA for each of the ASEAN NICs.

This study aimed to utilize the full set of time-series data, but the common time

⁷*Min and Choi* (2009) stated that the endogeneity problem of dynamic panel models cannot be solved using transformation, first-difference, or random effect models.

⁸A major background source for the growth theory based on foreign aid is the Two Gap model, which was modified from the Harrod–Domar growth model. *Chenery and Strout* (1966) explained that investment and growth are restricted by the level of both the savings gap and the foreign exchange gap.

span of each variable had to be considered in the individual economies (see Appendix A2). For Malaysia, the time-series data from 1970 to 2009 were used in this analysis because the FDI inflow has been recorded from 1970, whereas the other data (i.e., GDP, exports, and ODA) were collected from 1960 to 2009. For the Philippines, data from 1971 to 2009 were used for the same reason as Malaysia. Data from 1976 to 2004 were used for Thailand because the FDI inflow has been recorded since 1976 and the ODA outflow appeared to have overwhelmed the ODA inflow from 2005. Thus, the data covered more than 30 years in this time-series analysis. The data were obtained from the World Bank: World Development Indicators.

6.3.1 Unit Root and Cointegration Test

Because non-stationarity of time-series data is known to generate serious statistical problems, stationarity of the data was tested before implementing estimations. For a stationary time-series, the statistical properties such as the mean, variance, and autocorrelation all remain constant over time⁹. If a time-series is not stationary, there may be severe problems with the interpretation after the analysis, e.g., spurious regression. Therefore, the augmented Dickey-Fuller (ADF) test, which is used most widely, was employed in order to check for any unit roots (*Dickey and Fuller, 1979; Hamilton, 1994*).

Before testing whether the time-series was stationary, all of the variables were transformed into logarithmic scales in order to avoid heterogeneity problems. However, a trend still appeared to be present in the time-series after log transformation (see A2 in the Appendix). Thus, in addition to the logarithms of the variables, I screened the first-difference variables (see A3 in the Appendix). The graphs of the first-difference variable showed that there was no trend, but the averages of the time-series appeared to exceed zero. Thus, it was necessary to consider a constant term

⁹*Jani* (2014), P. N., Business Statistics: Theory and Applications, Delhi: PHI Learning Private Limited, 2014, p. 411.

when conducting the ADF test.

In addition, lagged variables can be added to improve the predictive power. However, caution is recommended because the variance of the estimators is likely to become higher. Thus, in this study, information criteria were used to select more optimal models. Furthermore, I tried to select the optimal number of lags based on *Lukepohl* (2005), who recommended using the Bayesian information criterion or Hannan–Quinn information criterion when comparing the final prediction error, or Akaike's information criterion because of overestimation. Consequently, I selected three lags in the models for Malaysia, one lag for the Philippines, and two lags for Thailand in the optimal time-series analysis.

Based on previous considerations of the time-series trends (i.e., deciding whether trends exist among the log level variables or not), optimal number of lags, or drift (i.e., the first differenced time-series was possibly stationary at a level greater than zero.), the ADF test was conducted. As reported in Table 6.1, the presence of a unit root is accepted for all the levels at the 5% level of significance. In contrast, the null hypothesis of a unit root is rejected for all first differences, indicating all the variables involved are $I(1)$. If the $I(1)$ variables are cointegrated, the short-term dynamic relationships could be analyzed by the vector error correction model (VECM) (*Johansen*, 1988, 1991, 1996). Otherwise, the relationship of the variables will be estimated by the VAR model using first-differenced data.

Johansen tests were conducted in order to determine the number of cointegrating equations conditional on the trend and lag order. Based on Johansen's maximum likelihood estimator of the parameters for cointegrating the VECM, the ranks were determined to minimize an information criterion by selecting the lag length in an autoregressive model (*Aznar and Salvador*, 2002). According to the results of the Johansen test of cointegration using the time-series for each of the ASEAN NICs, it

was clear that there was no cointegration¹⁰. Therefore, this paper reports the VAR results estimated using first differenced data without reporting the VECM results.

6.3.2 Granger causality test based on the VAR model analysis

VAR model analysis was required for the Granger causality test of GDP, exports, FDI, and ODA in ASEAN NICs. The VAR model was estimated using the seemingly unrelated regression method in order to obtain efficient estimates while considering the contemporaneous correlation between the error terms (*Zellner, 1962; Zellner and Huang, 1962*). The VAR model was specified as follows based on the previous discussion of stationarity:

$$Z_t = \alpha + \sum_{p=1}^n \Gamma_p Z_{t-p} + e_t, \quad (6.1)$$

where α is a (4×1) constant vector, Z_t an endogenous four-variable vector $\{d.lGDP_t, d.lExports_t, d.lFDI_t, d.lODA_t\}$, and n is the order of lags, which was determined by the information criteria, i.e., three lags in the models for Malaysia, two lags for Thailand, and one lag for the Philippines. Based on each set of equations obtained by VAR, a Granger causality test was conducted between the four endogenous variables (*Granger, 1969*). The suggested causal relationships were as follows.

For Malaysia, ODA had greater effects than FDI at the 1% level of significance and GDP at the 5% level of significance. For the Philippines, ODA had greater effects than exports at the 1% level of significance and GDP at the 5% level of significance. For Thailand, exports and FDI had greater effects than GDP at the 1% and 5% level of significance, and reverse causation was detected, where GDP had a greater

¹⁰The maximum eigenvalue statistics for each time-series were less than the 1% critical value, so the null hypothesis could be accepted that the maximum rank was zero, i.e., the statistical results were 20.67 for Malaysia, 26.14 for the Philippines, and 16.19 for Thailand compared with 32.24, which was the 1% critical value in this case.

Table 6.1: ADF Unit Root Test Based on the Log Level and First-Difference Series

	Log Level Series:		1st Difference Series:	
	k	Trend	k	Drift
<Malaysia>				
GDP	3	-2.650 (0.257)	3	-2.864 *** (0.004)
Exports	3	-2.392 (0.384)	3	-2.852 *** (0.004)
FDI	3	-2.811 (0.193)	3	-2.908 *** (0.003)
ODA	3	-2.574 (0.292)	3	-4.141 *** (0.000)
<Philippines>				
GDP	1	-3.287 (0.068)	1	-3.859 *** (0.000)
Exports	1	-1.74 (0.733)	1	-4.799 *** (0.000)
FDI	1	-2.816 (0.191)	1	-3.566 *** (0.001)
ODA	1	0.345 (0.996)	1	-3.554 *** (0.001)
<Thailand>				
GDP	2	-1.705 (0.749)	2	-2.097 ** (0.024)
Exports	2	-2.351 (0.406)	2	-2.620 *** (0.008)
FDI	2	-2.347 (0.408)	2	-3.299 *** (0.002)
ODA	2	-2.532 (0.312)	2	-3.069 *** (0.003)

Note: (1) p-value for $Z(t)$ in bracket. (2) *** $p < 0.01$, ** $p < 0.05$.

effect than exports at the 5% level of significance. In addition, a bidirectional causal relationship was detected between exports and FDI at the 5% level of significance in Thailand.

In case of individual level analysis for the ASEAN NICs, the causal relationships between GDP and investment sources as foreign exchange appeared diversely among the countries. For Thailand, both FDI and exports have strongly influenced on GDP, but for Malaysia and the Philippines, ODA has strongly influenced on their GDP. These results can be regarded that Thailand has been more successful to diversify and develop the nation economy than Malaysia and the Philippines. In other words, it means that Thailand has been successful to arrive at a point to become independent from aids; *Chenery and Carter (1973)* argued that Thailand was successful in accelerating exports over capital inflows by way of ODA in the 1960s. On the contrary, it can be regarded that Malaysia and the Philippines are still dependent on ODA up to the present. Therefore, economic growth in some of ASEAN NICs may not be originated from competitiveness in exports, and even *Ekanayake (1999)* and *Safdari et al. (2011)* showed reverse causality running from economic growth to exports among Asian developing countries including Malaysia. In addition, FDI effectiveness in the ASEAN has relied on not only government investment policy but also labor and market situations (*Rammal and Zurbruegg, 2006; Athukorala and Waglé, 2011*); therefore, a deterioration in the effectiveness and enforcement of investment regulations have an adverse effect on FDI activities in the ASEAN¹¹.

¹¹According to Doing Business reports from the World Bank, the situations of business policies among the ASEAN countries are so diverse that most of ASEAN countries has been evaluated not more than average grades; for example, the Philippines and Malaysia were ranked at 102 and 113 in the world for dealing with licenses in 2011 (see Table 2.3 and Table 2.4 in Chapter II).

Table 6.2: VAR Estimation and Granger Causality Test Result: Malaysia

VARIABLES	(1) <i>D.I</i> GDP	(2) <i>D.I</i> Exports	(3) <i>D.I</i> FDI	(4) <i>D.I</i> ODA
<i>L1D.I</i> GDP	0.703 (0.503)	0.327 (0.647)	1.897 (2.374)	-13.214 (16.603)
<i>L2D.I</i> GDP	-0.264 (0.502)	-0.359 (0.646)	-0.81 (2.369)	5.073 (16.574)
<i>L3D.I</i> GDP	-0.334 (0.448)	-0.115 (0.576)	-2.125 (2.112)	9.281 (14.773)
<i>L1D.I</i> Exports	-0.192 (0.366)	0.114 (0.471)	-0.096 (1.728)	3.006 (12.088)
<i>L2D.I</i> Exports	-0.024 (0.365)	-0.093 (0.470)	0.73 (1.722)	-8.636 (12.048)
<i>L2D.I</i> Exports	0.489 (0.353)	0.364 (0.454)	1.619 (1.665)	-9.487 (11.648)
<i>L1D.I</i> FDI	-0.007 (0.039)	-0.014 (0.051)	-0.339* (0.186)	1.516 (1.302)
<i>L2D.I</i> FDI	0.050 (0.042)	0.079 (0.054)	0.010 (0.198)	1.430 (1.387)
<i>L3D.I</i> FDI	-0.010 (0.041)	-0.029 (0.052)	-0.051 (0.192)	0.059 (1.341)
<i>L1D.I</i> ODA	0.003 (0.005)	-0.002 (0.007)	-0.022 (0.026)	-0.157 (0.179)
<i>L2D.I</i> ODA	0.011** (0.006)	0.005 (0.007)	0.012 (0.027)	-0.477** (0.186)
<i>L3D.I</i> ODA	-0.012* (0.007)	-0.014* (0.009)	-0.118*** (0.032)	0.101 (0.221)
Constant	0.058 (0.042)	0.100* (0.054)	-0.079 (0.200)	2.120 (1.397)
< Granger Causality Wald Test > (Malaysia)				
	Exports \Rightarrow GDP	GDP \Rightarrow Exports	GDP \Rightarrow FDI	GDP \Rightarrow ODA
Granger Causality	2.258 [0.521]	0.507 [0.917]	1.736 [0.629]	1.024 [0.796]
Wald Test:	FDI \Rightarrow GDP	FDI \Rightarrow Exports	Exports \Rightarrow FDI	Exports \Rightarrow ODA
<Malaysia>	2.448 [0.485]	4.437 [0.218]	1.353 [0.717]	1.464 [0.691]
	ODA \Rightarrow GDP	ODA \Rightarrow Exports	ODA \Rightarrow FDI	FDI \Rightarrow ODA
	9.929** [0.021]	3.653 [0.301]	15.199*** [0.002]	1.930 [0.587]

Notes: For this result, the first-difference series were utilized based on the results of the ADF Unit Root test in Table 6.1.

Standard errors are shown in round brackets.

The Wald test results are reported as chi-squared statistics, with p-values in square brackets.

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

Table 6.3: VAR Estimation and Granger Causality Test Result: The Philippines

	(1)	(2)	(3)	(4)
VARIABLES	<i>D.I</i> GDP	<i>D.I</i> Exports	<i>D.I</i> FDI	<i>D.I</i> ODA
<i>L1D.I</i> GDP	0.118 (0.279)	-0.248 (0.344)	-2.591 (8.094)	-0.513 (1.258)
<i>L1D.I</i> Exports	0.117 (0.218)	0.291 (0.269)	1.068 (6.330)	0.471 (0.984)
<i>L1D.I</i> FDI	0.001 (0.005)	-0.007 (0.006)	-0.486*** (0.144)	-0.014 (0.022)
<i>L1D.I</i> ODA	0.094** (0.038)	0.163*** (0.047)	0.419 (1.097)	-0.505*** (0.170)
Constant	0.126*** (0.034)	0.167*** (0.042)	0.595 (0.978)	0.163 (0.152)
<Granger Causality Wald Test> (Philippines)				
	Exports \Rightarrow GDP	GDP \Rightarrow Exports	GDP \Rightarrow FDI	GDP \Rightarrow ODA
Granger	2.286	0.521	0.102	0.167
Causality	[0.592]	[0.470]	[0.749]	[0.683]
Wald Test:	FDI \Rightarrow GDP	FDI \Rightarrow Exports	Exports \Rightarrow FDI	Exports \Rightarrow ODA
	0.016	1.45	0.028	0.230
<Philippines>	[0.899]	[0.228]	[0.866]	[0.632]
	ODA \Rightarrow GDP	ODA \Rightarrow Exports	ODA \Rightarrow FDI	FDI \Rightarrow ODA
	6.200**	12.254***	0.146	0.364
	[0.010]	[0.000]	[0.702]	[0.546]

Notes: For this result, the first-difference series were utilized based on the results of the ADF Unit Root test in Table 6.1.

Standard errors are shown in round brackets.

The Wald test results are reported as chi-squared statistics, with p-values in square brackets.

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

Table 6.4: VAR Estimation and Granger Causality Test Result: Thailand

VARIABLES	(1) <i>D.I</i> GDP	(2) <i>D.I</i> Exports	(3) <i>D.I</i> FDI	(4) <i>D.I</i> ODA
<i>L1D.I</i> GDP	0.429** (0.211)	0.407* (0.233)	-2.133* (1.283)	-10.747 (8.159)
<i>L2D.I</i> GDP	-0.580*** (0.208)	-0.591** (0.230)	0.766 (1.267)	-0.968 (8.063)
<i>L1D.I</i> Exports	0.343* (0.203)	0.426* (0.225)	2.778** (1.237)	3.051 (7.867)
<i>L2D.I</i> Exports	0.723*** (0.234)	0.498* (0.258)	0.775 (1.424)	11.109 (9.057)
<i>L1D.I</i> FDI	-0.060* (0.031)	-0.061* (0.035)	-0.205 (0.191)	0.352 (1.218)
<i>L2D.I</i> FDI	-0.059** (0.030)	-0.058* (0.033)	-0.268 (0.182)	-0.945 (1.160)
<i>L1D.I</i> ODA	-0.004 (0.004)	-0.004 (0.004)	0.002 (0.024)	-0.969*** (0.154)
<i>L2D.I</i> ODA	-0.083 (0.051)	-0.039 (0.057)	-0.216 (0.312)	5.751*** (1.982)
Constant	-0.012 (0.029)	0.059* (0.033)	-0.127 (0.179)	-2.027* (1.141)
<Granger Causality Wald Test> (Thailand)				
	Exports \Rightarrow GDP	GDP \Rightarrow Exports	GDP \Rightarrow FDI	GDP \Rightarrow ODA
Granger	12.294***	8.302**	2.862	1.867
Causality	[0.002]	[0.016]	[0.239]	[0.393]
Wald Test:	FDI \Rightarrow GDP	FDI \Rightarrow Exports	Exports \Rightarrow FDI	Exports \Rightarrow ODA
	6.787**	5.542*	5.315*	1.644
<Thailand>	[0.034]	[0.062]	[0.070]	[0.440]
	ODA \Rightarrow GDP	ODA \Rightarrow Exports	ODA \Rightarrow FDI	FDI \Rightarrow ODA
	3.388	1.194	0.491	0.809
	[0.184]	[0.550]	[0.782]	[0.667]

Notes: For this result, the first-difference series were utilized based on the results of the ADF Unit Root test in Table 6.1.

Standard errors are shown in round brackets.

The Wald test results are reported as chi-squared statistics, with p-values in square brackets.

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

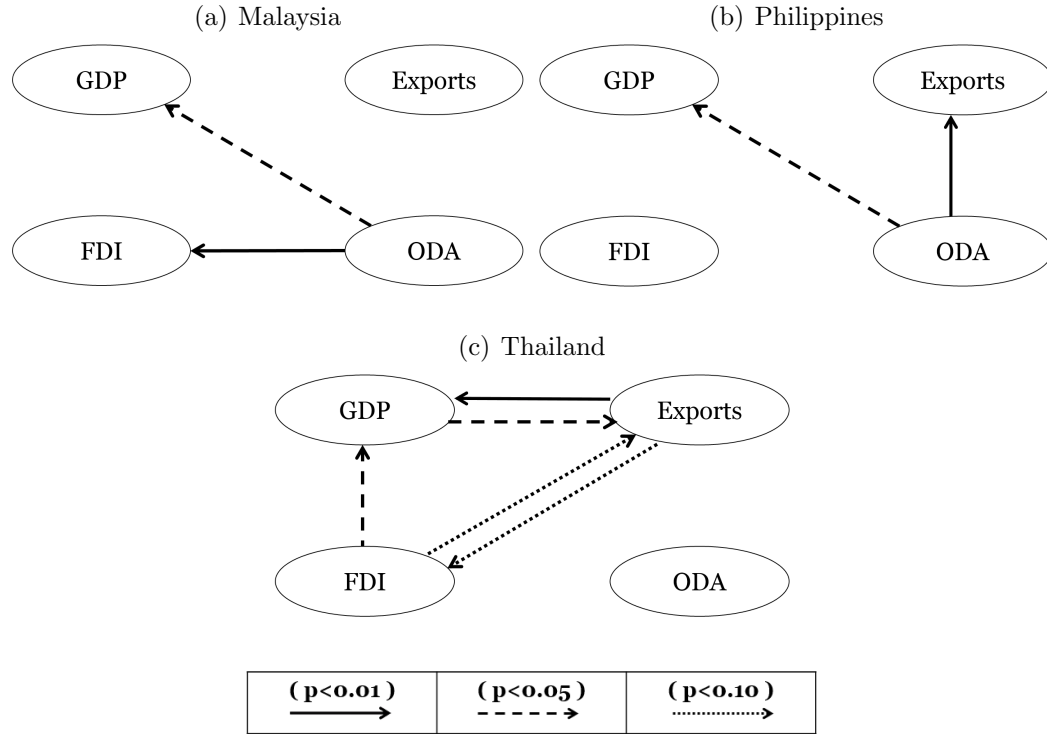


Figure 6.1: Summary of Granger Causality Test Analysis

6.4 Causal Effect Analysis of the Grouped ASEAN NICs: System GMM

Next, the causal relationships between GDP and investment sources as foreign exchange were analyzed for ASEAN NICs (i.e., exports, FDI, and ODA) using panel data. A panel-data vector autoregressive methodology was employed in this study. This technique was expanded from the traditional VAR approach, which regards all of the variables in the system as endogenous, to the panel approach, which includes unobserved group heterogeneity (*Chamberlain, 1983*).

In order to address the problem of endogeneity, the system generalized method of moments (GMM) method was applied. First, in the same manner as the individual time-series analysis, the unit root and optimal number of lags were tested stochastically. The unit root test for the panel model had to consider the problem of heterogeneous panels (*Choi, 2001; Levin et al., 2002*); thus, statistical hypothesis

tests were conducted to determine whether the panel data contained unit roots with common or different autoregressive parameters for each of the individual groups. As a result, it was found that the unit roots disappeared for all of the first differences (i.e., GDP, exports, FDI, and ODA) at around three lags¹². In addition, Helmert's transformation process based on the forward-mean-difference was conducted in this study because this approach is more effective at alleviating heterogeneity within groups (*Arellano and Bover, 1995*)

Moreover, the Westerlund cointegration test (*Westerlund, 2007; Persyn and Westerlund, 2008*) was conducted to determine whether an error correction term had to be included in the panel model with the I(1) variables. According to the results of the group-mean test and panel test, the hypothesis that there was no cointegration was supported¹³.

Therefore, the three order panel VAR model was specified as follows:

$$hZ_{it} = \gamma + \sum_{p=1}^n \Gamma_p hZ_{it-p} + u_i + e_{it}, \quad (6.2)$$

where γ is a (4×1) constant vector, hZ_{it} is a Helmert-transformed endogenous four-variable vector $\{h.d.lGDP_t \ h.d.lExports_t \ h.d.lFDI_t \ h.d.lODA_t\}$ (the Helmert process allowed the system GMM to exclude u_i , i.e., group heterogeneity, as well as maintaining the independence between the Helmert-transformed variables and lagged

¹²According to the results of the joint test for common autoregressive parameters in the first-difference panels, the unit roots disappeared for GDP, exports, and FDI at the 5% significance level, but the unit root was still present for ODA at the 10% significance level. However, for the stochastic test with a more general null hypothesis that autoregressive parameters differed in each of the individual groups, all of the statistics indicated that unit roots were not present at the 10% significant level.

¹³It was difficult to reject the null hypothesis that there was no cointegration at the 10% level of significance in this panel VAR model using both statistics, i.e., equation 1 for the dependent variable with $lnGDP$: (G_τ : -2.54, G_α : -4.87, P_τ : -3.11, P_α : -2.79); equation 2 for the dependent variable with $lnExports$: (G_τ : -2.55, G_α : -6.86, P_τ : -2.48, P_α : -4.42); equation 3 for the dependent variable with $lnFDI$: (G_τ : -2.64, G_α : -2.13, P_τ : -4.30, P_α : -1.32); and equation 4 for the dependent variable with $lnODA$: (G_τ : -1.57, G_α : -5.70, P_τ : -1.97, P_α : -1.94).

endogenous variables (*Arellano and Bover, 1995*), and n is the order of lags, where three lags were used in this panel VAR study. Based on the results obtained for the panel VAR using the system GMM, causality tests between the four endogenous variables were conducted with the Wald test. The causal relationships are shown in <Table 6.5>.

In summary, ODA and FDI had greater effects than GDP at the 1% level of significance. FDI had a greater effect than exports at the 1% level of significance and ODA had a greater effect than exports at the 10% level of significance.

In addition, I present both graphs for the impulse-response functions (IRFs) with 5% error bands, which were generated from 1000 replicated Monte Carlo simulations, and the forecast error variance decompositions obtained using the methods described by *Love and Zicchino (2006)*. The IRFs are the reactions for hZ_{it} if it is shocked by one unit e_{it} ; thus, the causes and effects between each of the variables are presented over time. The forecast error variance decompositions indicate that the forecast error variation accumulated over time for each of the variables following shocks from other variables in the autoregression. The variance decompositions indicate the magnitude of the total effect.

In Figure 6.2, the impulse responses of GDP and exports to investment sources as foreign exchange are highlighted. The impulse responses of GDP to one standard deviation shocks in ODA, FDI, and exports generally had positive signs, but their degrees were different. The effects of ODA and FDI on GDP increased for two and three years, respectively, before decreasing. However, the impact of exports on GDP was not clear. For the impulse responses of exports to FDI and ODA, the effects occurred one year later, but the sign was generally positive.

Table 6.5: VAR Estimation and Panel Causality Test Result: ASEAN NICs

VARIABLES	(1) <i>h_dlGDP</i>	(2) <i>h_dlExports</i>	(3) <i>h_dlFDI</i>	(4) <i>h_dlODA</i>
<i>L1.h_dlGDP</i>	0.517*** (0.188)	0.189 (0.217)	-4.367 (4.635)	-11.676* (7.082)
<i>L2.h_dlGDP</i>	-0.079 (0.186)	-0.231 (0.203)	-0.909 (4.516)	-0.398 (6.910)
<i>L3.h_dlGDP</i>	0.237 (0.184)	0.164 (0.192)	3.868 (4.110)	12.569** (6.160)
<i>L1.h_dlExports</i>	-0.039 (0.161)	0.238 (0.180)	0.340 (3.937)	6.317 (6.151)
<i>L2.h_dlExports</i>	-0.042 (0.162)	0.002 (0.169)	4.348 (3.744)	3.728 (5.809)
<i>L3.h_dlExports</i>	-0.053 (0.157)	0.096 (0.161)	-2.733 (3.707)	-10.848* (5.702)
<i>L1.h_dlFDI</i>	0.002 (0.005)	-0.004 (0.006)	-0.638*** (0.092)	0.090 (0.182)
<i>L2.h_dlFDI</i>	0.006 (0.005)	0.012** (0.006)	-0.337*** (0.108)	0.187 (0.191)
<i>L3.h_dlFDI</i>	0.017*** (0.005)	0.024*** (0.005)	-0.250** (0.099)	0.083 (0.167)
<i>L1.h_dlODA</i>	0.008* (0.004)	0.002 (0.005)	0.001 (0.095)	-0.063 (0.125)
<i>L2.h_dlODA</i>	0.012*** (0.004)	0.006* (0.004)	0.024 (0.087)	-0.481*** (0.113)
<i>L3.h_dlODA</i>	-0.003 (0.004)	-0.008* (0.005)	0.031 (0.104)	0.199 (0.146)
Constant	0.004 (0.013)	0.007 (0.015)	0.021 (0.320)	-0.320 (0.478)
Wald Test of Coefficients				
	Exports \Rightarrow GDP	GDP \Rightarrow Exports	GDP \Rightarrow FDI	GDP \Rightarrow ODA
	0.24	2.11	1.71	5.93
Wald Test of	[0.971]	[0.550]	[0.635]	[0.115]
System GMM	FDI \Rightarrow GDP	FDI \Rightarrow Exports	Exports \Rightarrow FDI	Exports \Rightarrow ODA
Estimation	12.89***	23.45***	1.91	5.34
Coefficients	[0.005]	[0.000]	[0.591]	[0.149]
	ODA \Rightarrow GDP	ODA \Rightarrow Exports	ODA \Rightarrow FDI	FDI \Rightarrow ODA
	15.84***	7.37*	0.18	0.96
	[0.001]	[0.061]	[0.980]	[0.810]

Notes: Standard errors are shown in round brackets.

The Wald test results are reported as chi-squared statistics, with p-values in square brackets.

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

Impulse-responses for 3 lag VAR of dIODA dIGDP dIExports dIFDI

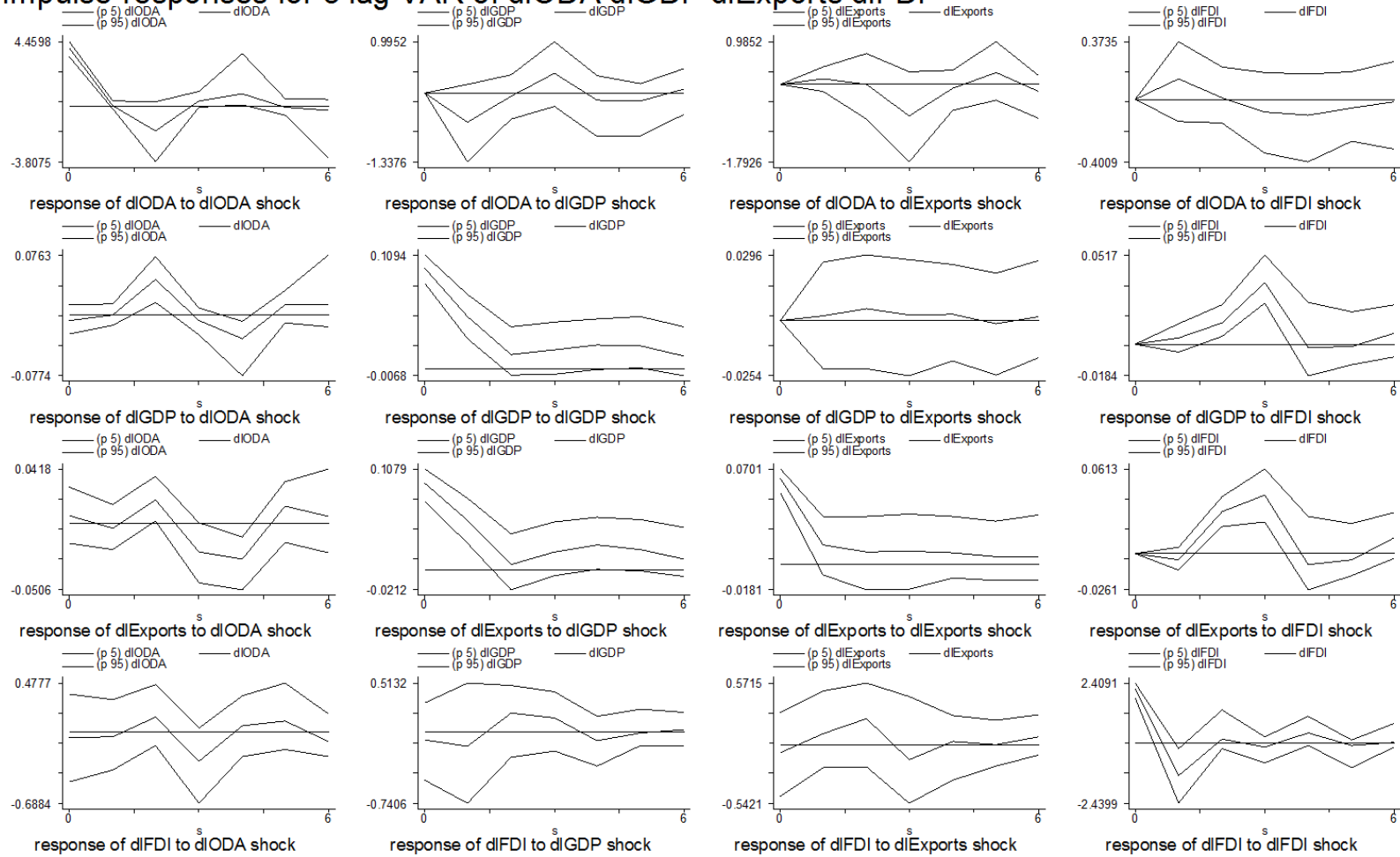


Figure 6.2: Impulse-responses for the ASEAN economic development sample (model with four variables: GDP, ODA, FDI, and exports)

Table 6.6 shows the variance decompositions with these results. ODA and FDI explained more of the variation up to ten periods ahead among the GDP and investment sources as foreign exchange in ASEAN NICs. ODA and FDI affected the GDP by 18.2% and 8.3%, respectively. However, the impact of exports on GDP was low at 0.5%. In addition, FDI and ODA affected exports by 13.6% and 8.6%, respectively. In summary, ODA and FDI have played major roles in the economic growth of ASEAN NICs.

Table 6.6: Forecast Error Variance Decompositions

	s	<i>d</i> ODA	<i>d</i> GDP	<i>d</i> Exports	<i>d</i> FDI
<i>d</i> ODA	10	0.940	0.025	0.033	0.002
<i>d</i> GDP	10	0.182	0.730	0.005	0.083
<i>d</i> Exports	10	0.086	0.578	0.199	0.136
<i>d</i> FDI	10	0.020	0.014	0.014	0.952

Notes: The percentage of variation in the row variables explained by the column variables is shown.

6.5 Conclusion and Discussion

This study employed a VAR method to analyze the relationships between GDP and investment sources as foreign exchange (i.e., ODA, FDI, and exports) in ASEAN NICs. Overall, the results showed that ODA has played a fundamental role in driving the ASEAN economy and FDI has also contributed considerably to GDP and export earnings in ASEAN NICs. However, the export earnings of ASEAN NICs had comparatively lower effects on their economies. These results may be explained by features of the Asian economy and the use of two-variable relationship studies, as suggested in Sections 6.1 and 6.2.

Discussions of the Asian miracle can be summarized in terms of both productivity

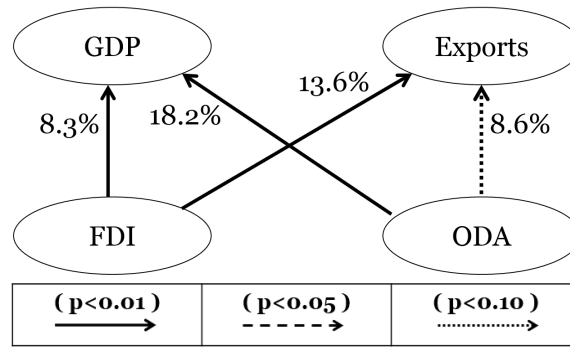


Figure 6.3: Summary of Causal Relationships in the Growth of ASEAN NICs: Dynamic Panel Analysis

Notes: This diagram for the summary was presented based on the results of the Wald Test of system GMM estimation coefficients and forecast error variance decompositions as reported in Table 6.5 and Table 6.6. Additionally, it is clear that FDI has affected GDP and exports in a positive direction, but ODA has affected GDP and exports in both positive and negative directions as reported in Figure 6.2.

and efficiency. Investment in domestic industries, human capital development, and government leadership via sound development policy are considered to be key factors related to the economic growth of the least developed countries. The results of this study show that ODA and FDI have played beneficial roles in developing countries, but there are some prerequisites for the government sector, i.e., the will of government to enhance competitiveness by promoting trade (*Chenery and Carter, 1973*) and government leadership to negotiate with both domestic industries and foreign donors (*Zhang, 2005*). However, it should be noted that the contributions of ODA and FDI to the economic growth of ASEAN NICs are different. FDI can be regarded as a composite bundle of capital stocks, know-how, and technology (*de Mello, Jr., 1997*), but ODA seems to have been more effective and it can be considered mainly as an infrastructure effect (*Harms and Lutz, 2006*). Thus, more detailed analyses are required to understand the factors related to both donors and recipients that determine the effects of FDI on growth in developing countries. Contrary to expectations,

export earnings had comparatively less influence on economic growth, but we should remember that it is necessary to construct sound economic policy and a supportive atmosphere as well as opening up the economy (*Baldwin, 2003*).

Meanwhile, the economic performance of major ASEAN NICs does not seem to be compatible with that of the HPAEs, which was reported by *Stiglitz and Yusuf (2001)*. From the inside of ASEAN, governments' efforts are required to raise effectiveness in their markets for stronger export competitiveness and more domestic and foreign investment for contributing to their business innovations. If needed, it can be recommended to fasten the partnerships with the Asian Four Tigers that changed their status from less developed countries into advanced economies from 1997 to share the successful government role models; especially, the Korean government lead Korea as the first ODA doner country in the world from a major ODA recipient as one of the poorest countries in the 1950s. From the outside of ASEAN, it is desired to be conducted more in-depth but comprehensive studies reflecting economic and cultural diversity of ASEAN member countries with a common regional concept as the ASEAN, which is quite different from other economic integrations such as the EU or NAFTA.

The results of this study are useful because they suggest the importance of the collective causal relationships between GDP and investment sources as foreign exchange, which have interesting implications. These results contribute to the study of world economic development and thus comprehensive studies of causality in other groups of developing countries should be conducted to compare the results with the present study of economic growth in ASEAN NICs.

CHAPTER VII

Summary and Conclusions

7.1 Summary and Conclusions

This dissertation attempted to show the effectiveness of investment sources as foreign exchange, i.e., trade earnings, foreign direct investment (FDI), and official development assistance (ODA), in ASEAN's attempts to realize economic integration. ASEAN differs from other regional trade blocs pursuing economic integration in that the ASEAN countries share a common interest in the pursuit of development, but have diverse cultural and economic backgrounds. Therefore, this study on the economic integration of ASEAN had to consider the diversity within the bloc.

First, based on the theory of optimum currency areas, trade and FDI flows were analyzed to evaluate economic integration in ASEAN compared with other major economic integrations, e.g., the EU, NAFTA, and ASEAN+6. With regard to dependence on trade, ASEAN was the economic integration most inclined to be open to the world economy, but as an intra-regional relationship, it remained less developed and robust than the EU. Additionally, the growth rate of investment flows into ASEAN was higher than for other economic unions. Furthermore, comparison of ASEAN+6 and the EU in terms of trade flows reveals similar levels of economic openness for both economic unions, though from an intra-regional perspective the EU was more open than ASEAN+6. However, the gap in FDI flows between the ASEAN+6 and

the EU recently has narrowed considerably.

Analysis of the effect on trade of ASEAN plurilateral RTAs (i.e., FTAs between ASEAN members and partners outside the bloc), focused on the 1988 to 2015 period, found significant growth of imports for ASEAN countries after RTA implementation. ASEAN plurilateral RTAs have affected trade flows less than ASEAN bilateral FTAs, but have had an even clearer trade diversion effect, which has led to the substitution effect. Analysis of the effect of ASEAN RTAs for partner countries outside ASEAN found that exports, imports, and total trade to Korea increased after those countries signed ASEAN RTAs. For Australia, New Zealand, and India, no significant changes in trade volume except imports were found after these countries signed ASEAN RTAs. Meanwhile, exports, imports, and total trade to China and Japan decreased after those countries signed ASEAN RTAs. Notably, ASEAN's trade tends to be more focused on East Asia and the Pacific than other continental regions. This economic affinity is expected to be a crucial motivation in overcoming the economic and cultural diversity among Asia Pacific countries.

Additionally, utilizing macro-level panel data from 2001 to 2012, the economic effect of ASEAN plurilateral RTAs on inward FDI to ASEAN countries was analyzed from the perspective of industrialization development stages. Initially, according to estimates for the ASEAN countries as a group, ASEAN RTAs had a positive impact in attracting vertical FDI to the region, representing a change from the previous situation where horizontal FDI had been dominant. Meanwhile, for Singapore, with its diversified economy, ASEAN RTAs were not effective in attracting FDI from source countries. Singapore had already successfully attracted vertical FDI before the ASEAN RTAs. For economies undergoing industrialization, such as Thailand, Malaysia, and the Philippines, ASEAN RTAs exerted a negative effect in attracting FDI. In this group, horizontal FDI dominated before ASEAN RTAs, but ASEAN RTAs created a strong incentive for potential investors to replace such foreign invest-

ment with trade transactions. However, the influence of market potential increases after ASEAN RTAs, which induces third-country effects such as export platform FDI. Finally, for the incipient industrialization economies of Indonesia, Vietnam, and Cambodia, ASEAN RTAs attract vertical FDI. In this group, horizontal and vertical FDI coexisted before ASEAN RTAs, but after ASEAN RTAs vertical FDI became more attractive.

Furthermore, I used time-series and panel data from 1970 to 2009 to analyze the causal relationships among GDP, exports, FDI, and ODA in ASEAN newly industrialized countries (NICs). According to the causality study based on vector autoregressive (VAR) analysis for each country, ODA was the dominant factor for GDP in Malaysia and the Philippines, and definite mutual causal relationships existed among exports, FDI, and GDP for Thailand. Additionally, the results of panel VAR analysis based on system generalized method of moments (GMM) showed the effects of ODA and FDI on the GDP of ASEAN NICs to be 18.2% and 8.3%, while their effects on exports were 8.6% and 13.6%, respectively. In summary, ODA has contributed fundamentally to the economies of ASEAN NICs, while FDI has also contributed to their GDP and export earnings. However, the effects of export earnings on the economies of ASEAN NICs appear to have been comparatively weaker.

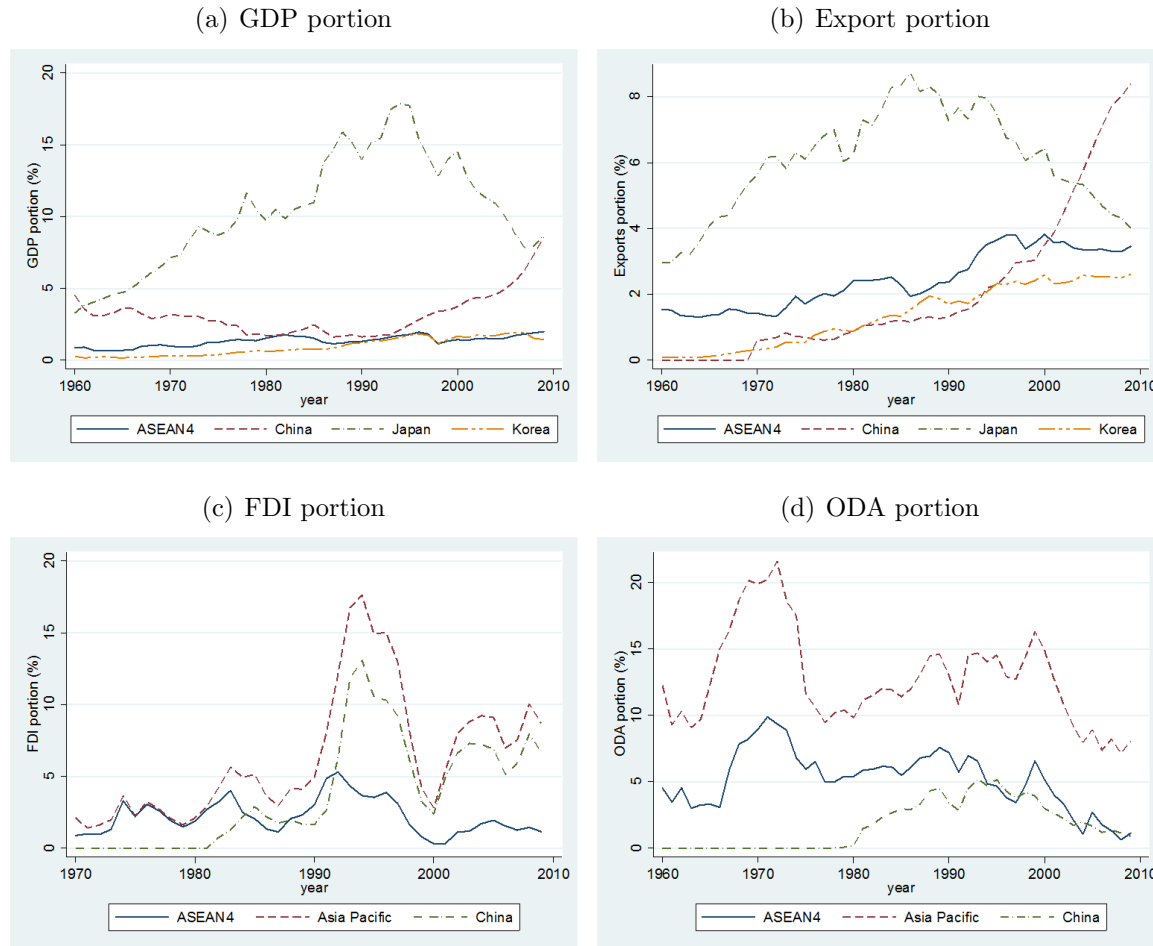
APPENDICES

APPENDIX A

Part A

A Appendix

A.1 GDP Ratio, Exports Ratio, FDI Ratio, ODA Ratio throughout the World



Source: the World Bank, World Development Indicators.

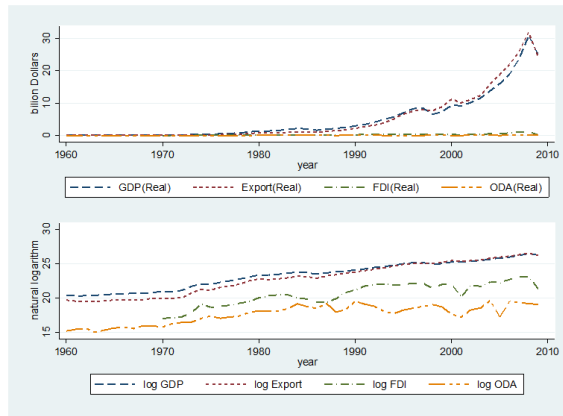
Notes: ASEAN4 comprises Thailand, Malaysia, Indonesia, and the Philippines.

Asia Pacific only comprises the developing countries in the Asia Pacific region.

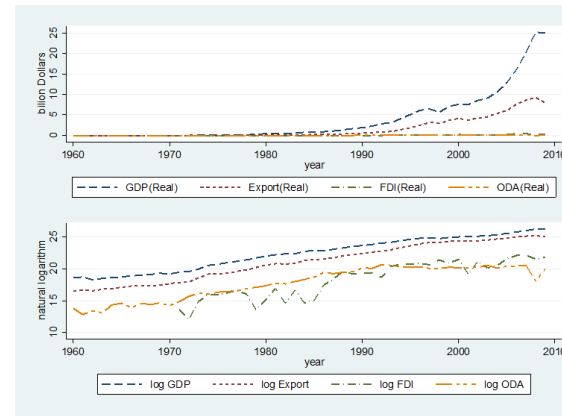
Figure A1: Summary of Causal Relationships in the Growth of ASEAN NICs : Dynamic Panel Analysis

A.2 Trends in GDP and Investment Sources as Foreign Exchange in ASEAN NICs

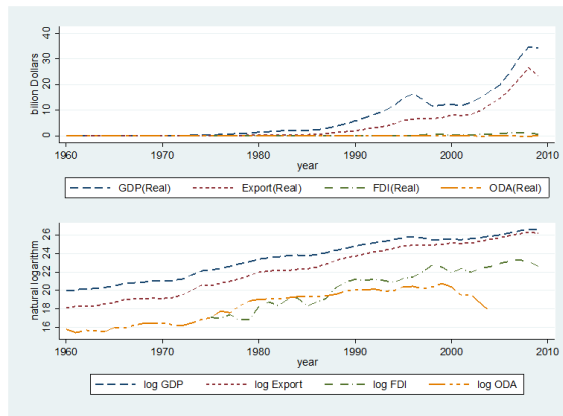
(a) Malaysia



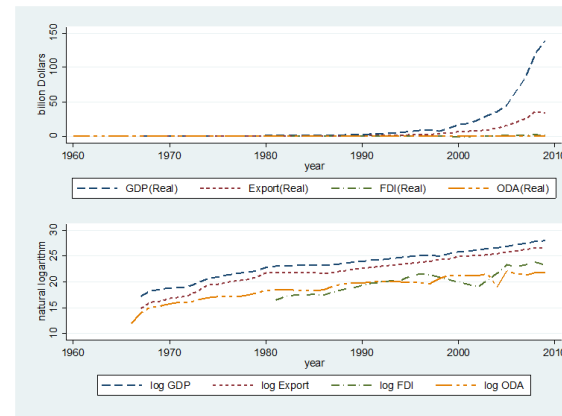
(b) Philippines



(c) Thailand



(d) Indonesia

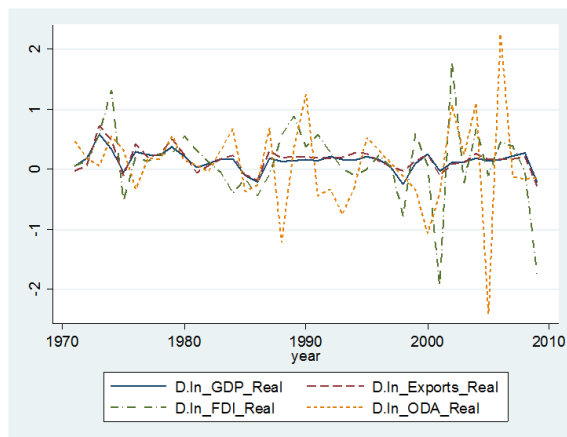


Source: the World Bank, World Development Indicators.

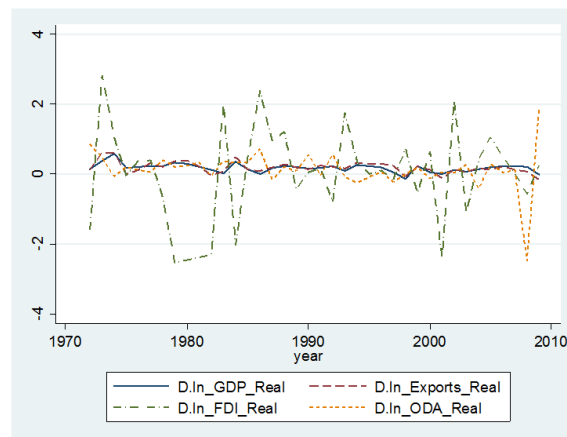
Figure A2: Trends of GDP, Exports, FDI, and ODA of ASEAN NICs

A.3 First Differences in GDP and Investment Sources as Foreign Exchange in ASEAN NICs

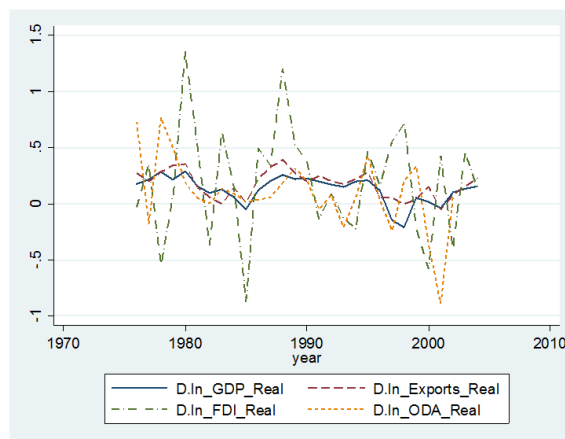
(a) Malaysia



(b) Philippines



(c) Thailand



Source: the World Bank, World Development Indicators.

Figure A3: First Differences in GDP, Exports, FDI, and ODA in ASEAN NICs

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