Myanmar's International Trade Competitiveness through the effect of FDI Comparing with Successful FDI promoted Asia Countries

Dissertation

Presented to
Graduate School of
Humanities and Social Sciences
(Doctor`s Course)
OKAYAMA UNIVERSITY

In Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy in Economics (経済学)

By

KHIN MAR THET

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Abbreviations

ASEAN	Association of Southeast Asian Nations
CBM	Central Bank of Myanmar
CIL	Citizens' Investment Law
CLM	Cambodia, Lao and Myanmar
DICA	Directorate of Investment and Company Administration
DOTs	Direction of Trade Statistics
EU	European Union
ERIA	Economic Research Institute for ASEAN and East Asia
FDI	Foreign Direct Investment
FIL	Foreign Investment Law
GDP	Gross Domestic Product
GSP	Generalized System of Preferences
IFS	IMF International Financial Statistics
ISI	Import-Substituting Industrialization strategy
MIL	Myanmar Investment Law
MIC	Myanmar Investment Commission
NIEs	Newly Industrial Economies
NES	Myanmar National Export Strategy
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Square
SEZs	Special Economic Zones
SMEs	Small and Medium Enterprises
UNCTAD	United Nations Conference on Trade and Development
US	United States
WTO	World Trade Organization

Abstract

Trade can promote the development of a country by improving factors such as technological progress, the importation of technical knowhow, greater access to resources, the expansion of markets and attracting foreign direct investment (FDI). This study mainly focuses on how Myanmar's trade competitiveness can increase through higher foreign direct investment inflows by comparing Myanmar to other Asian countries with successful FDI inflows.

When analyzing the main theme, this study is divided into four parts. Firstly, it describes the evolution of Myanmar's trade development and foreign direct investment inflows while explaining historical background conditions, the current situation and recent and possible future trends of FDI by examining past data.

Secondly, it determines the influential determinants of FDI inflow in Myanmar and describes the current Myanmar economy. Many different factors affect FDI inflows and it is believed that FDI contributes to the improvement of an economy by enhancing a nation's economic growth.

Thirdly, an analysis of the trade structure between Myanmar and 20 partner countries estimated with a standard gravity model using panel data. Although GDP and distance variables can explain Myanmar's trade structure, an ASEAN dummy cannot explain what Myanmar still needs to do in cooperation with ASEAN for trade improvement. According to the Trade Conformity Index (TCI), Myanmar's trade structure shows that trade volume increases with falling complementary trade and it has an increasingly competitive trade

structure using differentiated product models with intra-industry trade. The standard gravity model can explain Myanmar's trade structure and flow.

The final part of this study explores the impact of trade openness and exchange rate volatility on foreign direct investment in Myanmar and the eight ASEAN member countries covered by the dates of this case study (1990-2014).

Some consequences of the previous long-term sanctions imposed by the US and the EU were that Myanmar could not promote its trade sector and had difficulty attracting foreign direct investment. Exchange rate volatility was inversely related to FDI inflow due to Myanmar's long history of using a de facto multiple exchange rate system. In the analysis of ASEAN countries, trade openness and the export per GDP ratio were directly related to FDI inflow as a percentage of GDP and proves that a nation's free trade policies contribute to foreign direct investment inflow per GDP. The larger the exchange rate volatility, the greater the impact on FDI inflow in ASEAN countries can be shown for both explained variables. The analysis model proves that exchange rate volatility's impact on FDI inflow is an appropriate explanation regarding Myanmar's FDI inflow and also proves that trade openness affected FDI inflow per GDP in ASEAN countries.

INTRODUCTION

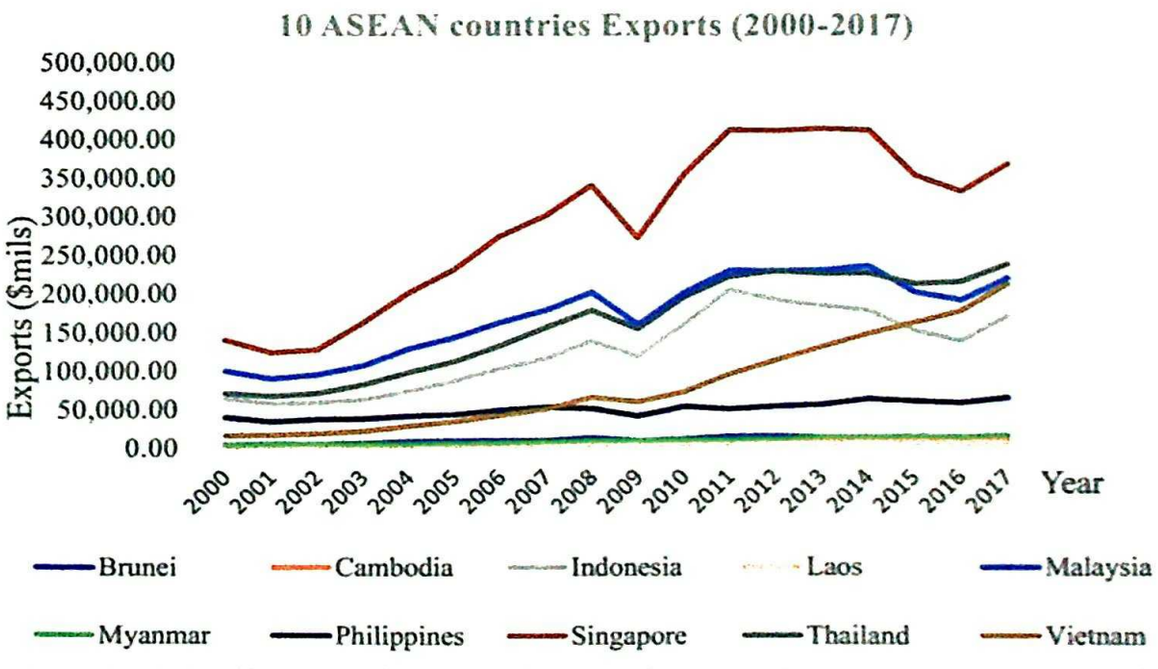
Background of the Study

Trade is one influential way towards economic development for countries all over the world. Moreover, trade played a vital role in the historical development of Third World countries. Likewise, international trade allows for the efficient allocation of resources and supports human welfare by applying a division of labor. In addition, trade can promote the development of the country by improving its technological progress, the importation of technical knowhow, greater access to resources and an expansion of markets that come from specialization, encourage strong competition and attract foreign direct investment (FDI). Most ASEAN countries have achieved outstanding economic progress by partaking in regional integration. In 1992, Myanmar joined the regional cooperation agreement called the Greater Mekong Sub Region (GMS) which including China, Thailand, Laos, Cambodia and Vietnam to raise trade and cross-border investment. Similarly, Myanmar is attempting to strengthen its economy with membership in the Association of Southeast Asian Nations (ASEAN) and has chances to utilize its singular geographic position as a link between South and Southeast Asia, which can offer new opportunities. As ASEAN is among the fastest growing economies in the world, stronger integration between member countries will allow ASEAN to continue to out-perform the rest of the global economy.

Since the Democratic government took power and changed many administrative systems in the country, Myanmar has a chance to create new economic opportunities through trade sector openness, encouraging foreign direct investment and moderating its financial sector

properly. Myanmar's long-time policy of self-reliance allowed the country to survive in isolation for many decades without taking much support from the world economy or regional communities. Many economic reforms have been made in the trade sector and other essential sectors. As a market economy, the foreign trade policy of Myanmar is mainly a self-determining one and has remained at the center of debate on the economic policies implemented in Myanmar. Nevertheless, transforming to an open-door policy and its related trade growth are the most powerful forces to strengthen Myanmar's economy. With this favorable situation, Myanmar may develop its trade sector development by setting up appropriate trade policies accompanied by the utilization of domestic natural resources and human resources.

Figure 1 Exports from ASEAN 10 countries (2000-2017)



Source: IMF: International Financial Statistics (IFS)

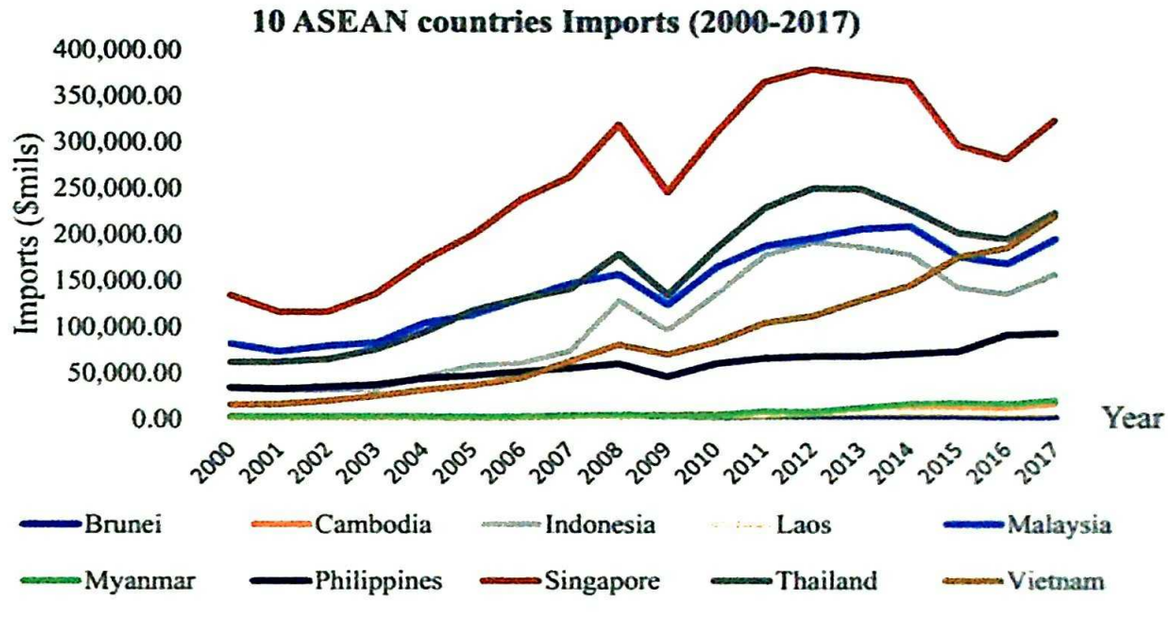
Among the exports from 10 ASEAN countries (2000-2017), Singapore was the largest exporter followed by Malaysia, with Thailand in the third position. Indonesia, Vietnam and the Philippines followed in relative positions. All of these countries experienced a substantial increase in export value since 2001 with slight changes during this period. In addition, after international financial crisis in 2008, exports decreased in nearly all of these countries and from 2016 to 2017 their exports also increased. Myanmar, Cambodia, Laos and Brunei had far lower export totals without a substantial difference between them. (Fig. 1)

Many different factors affect the volume and distribution of FDI in developing countries around the world. Many researchers have found that the primary determinants of major FDI inflows including political stability, favorable policies regarding tax and subsidies, the existence of an appropriate business environment, better administrative procedures and low level of corruption. Since globalization, the world economy is more characterized by increased integration and ties with between countries in which Foreign Direct Investment (FDI) constitutes a business phenomenon of vital importance and frequency. Likewise, it is believed that FDI contributes to the improvement of macroeconomic outcomes of the host countries, and from there it can enhance a nation's economic growth.

When checking the imports of 10 ASEAN countries (2000-2017), Singapore is also in the highest position with Thailand following in second position and Malaysia third. Indonesia, Vietnam and the Philippines followed in relative positions. Like the above-mentioned export values, these countries had a substantial increase in import values since 2001 with slight changes during the period. However, in 2009, after the 2008 international financial crisis, imports decreased substantially and increased later in the period. Myanmar, Cambodia, Laos

and Brunei had the lowest import values without a substantial difference between them although there was a small increase later in the period. (Fig. 2)

Figure 2 Imports into 10 ASEAN countries (2000-2017)



Source: IMF: International Financial Statistics (IFS)

Myanmar has a significant probability to promote its economic development based on an FDI export-oriented driven growth strategy through East Asia's production networks such as that adopted by Vietnam in the past two decades. Likewise, FDI is a critical element for the development of Myanmar in the future, considering that the most advanced ASEAN countries, plus countries such as Malaysia, Thailand and China that have shown good economic performances after receiving large amounts of FDI. On the other hand, these countries have deregulated FDI policies and have demonstrated outstanding accomplishment in attracting FDI.

Like other Asian countries including China, Bangladesh, Cambodia, and Vietnam, Special Economic Zones (SEZs) in Myanmar have played an essential role in jumpstarting manufacturing activity to attract FDI (IMF Country Report, 2018). Like China and Vietnam, Myanmar has the comparative advantage of lower labor cost. FDI has played a central role in transforming Vietnam from a country exporting mainly commodities to one exporting a diversified set of products. Vietnam also took some practical steps while experiencing a string of success in various aspect of FDI promotion and has carried out measures to attract FDI in line with deepening integration into the regional and world economies. Following their example, Myanmar has also gained considerable trade competitiveness in attracting FDI in export-oriented labor-intensive sectors.

Objectives of the Study and Research Context

This research aims to achieve four primary objectives:

Firstly, the objective of this study was to investigate the evolution of Myanmar's trade sector and foreign direct investment inflows into Myanmar by showing both the historical background conditions and the current situation. This historical description will weigh factors for improving the process and draw out some hindering conditions for the improvement of trade and FDI in Myanmar.

Secondly, this paper points out the influential determinants of FDI inflow in Myanmar by showing the current situation of Myanmar's economy as a case study. Many researchers have described the primary determinants of major FDI inflows. Since globalization, the world economy is more characterized by increasing integration and ties between countries in which

FDI constitutes a business phenomenon of vital importance and frequency. Likewise, many different factors affect the volume and distribution of FDI in developing countries of the world and it is believed that FDI contributes to the improvement of macroeconomic outcomes of the host countries and enhances a nation's economic growth.

Thirdly, this study intends to assess Myanmar's trade potential and complementary trade in the future by empirically investigating its trade flows by comparing them with trading partner countries. It seeks to draw out the strengths and weaknesses of Myanmar's trade competitiveness by analysing bilateral trade partner countries by using the trade conformity index (TCI).

Finally, this paper endeavors to make a comparison and find the determinants of FDI by comparing Myanmar with Asian countries that have successfully promoted FDI and trade impacts on FDI. In analyzing the impacts of FDI on key economic variables, this research seeks to prove the impact of trade openness, exchange rate volatility and other economic variables on FDI inflow by focusing on seven ASEAN countries (excluding Singapore, Brunei, and Timor-Leste and Myanmar) by using the panel data analysis of fixed effect and random effect model estimation and a Hausman test to check whether REM is appropriate or not. It intends to find the proper techniques and means for FDI promotion in Myanmar using OLS estimation. It also attempts to highlight appropriate ways and methods for trade sector development through FDI promotion in Myanmar. Finally, it seeks to point out the negative and positive effects of FDI, along with future trends in FDI and trade potential that Myanmar will face in the coming future.

This research seeks to answer the following research questions:

1. What are the influential factors on Myanmar's trade structures, flows and patterns?
2. What are the influential determinants of FDI inflows to Myanmar?
3. Does the gravity model of trade explains Myanmar's trade structure and trade pattern using the trade conformity index?
4. How can trade openness, exchange rate volatility and key economic variables impact FDI inflow to Myanmar and other ASEAN countries?

Organizational Structure of the Study

This study is organized into six parts:

First, an introduction to the background of the study, the objectivities of the research, the context of the study and the organizational structure of the study.

Chapter 1 summarizes the evolution of Myanmar's trade structure and foreign direct investment with explanations of the historical background of trade and FDI, the evolution of trade structures and policies, the relationship between Myanmar's trade policy and its political situation, recent and future FDI trends provided by examining data reported in past years.

Chapter 2 is a qualitative analysis of the influential determinants of FDI inflow into Myanmar using the current economy as a case study. This part of the study is made up of four sections; exploring some perspectives from previous literature, current FDI trends in Myanmar, the influential determinants of FDI in Myanmar, and FDI policy implication for Myanmar.

Chapter 3 investigates the current trade structure and flow in Myanmar using the gravity model to compare the country with the bilateral trade partners including both Asian and

Western countries. This research endeavour is made up of five sections; exploring the theoretical framework and some perspectives from previous literature, illustrating the empirical methodology, data description and finally discussing the empirical results and conclusion of the main findings along with some remarks.

Chapter 4 verifies the effects of trade openness and exchange rate volatility on foreign direct investment in ASEAN and Myanmar using panel data and time series data analysis. This chapter of the study contains the following five sections; exploring some perspectives from previous literature, the theoretical foundation of FDI, illustrating the research methodology and empirical model, data description and sources of data and finally explaining the results, including a discussion on policy implications, and the conclusion of the study.

Finally, there is a summary highlighting how and what this study can contribute to Myanmar and other ASEAN countries' FDI and trade improvement. As for policy implications, weaknesses and strong points are described along with some of the limitations of the study with some suggestions for further potential research concerns about foreign direct investment and trade issues for the future.

CHAPTER I

Evolution of Myanmar Trade Structure and Foreign Direct Investment

1.1 Introduction

The objective of this study was to investigate the evolution of Myanmar's trade sector and foreign direct investment (FDI) inflows into Myanmar. The qualitative analysis based on descriptive studies uses secondary data from Myanmar governmental organizations, international organizations and other relevant publications. This study contains four sections; exploring the historical background of Myanmar trade structure, explaining trade flow and structure from 1988 onwards, presenting an overview of trade patterns and policy, and finally describing foreign direct investment in Myanmar.

Myanmar is located in mainland Southeast Asia and also situated on the dynamic crossroads linking Southeast Asia, Western China (Yunnan) and the Indian sub-continent. Myanmar has a potentially vast market and is a sub-regional economic nodal link progressing towards international integration. At the beginning of the sixteenth century, during the times of Burmese kings, Myanmar traded with neighboring Southeast Asian countries and exported mainly rice to European countries (Myan Than (1992), p 6). When the British annexed Myanmar in 1886, the country adopted a laissez-faire system with free trade. After the Revolutionary Council took power in 1962, the government introduced an import substitution industrialization (ISI) policy to encourage foreign investment.

In 1998, under the market-oriented economics system, government liberalized trade and set three basic categories of trade: trade, transit trade, and border trade (Myat Thein (2004)).

Though the government stated that export promotion and import substitutions would be the main planks of trade policy, export rules and regulations were revised during 1998-99. After the 2010 election, the democratic government adopted an open-door policy to create more economic opportunities. At the same time, Myanmar passed trade liberalization and had a strong desire for free and fair trade with the rest of the world. Myanmar has adopted bilateral trade policies as well as testing multilateral trading policies in practice. The composition of both export and import changed after 2010 onwards.

Historically, Myanmar has been familiar with foreign investment and external business operations since the seventeenth century. Foreign direct investment has played a significant role in the recently industrializing countries of Southeast Asia. Singapore, Malaysia, Hong Kong, China, and Thailand have been large recipients of FDI inflow since 1985. Myanmar's FDI inflow has greatly increased since 1988. Most of the investment come from Asia Pacific and Association of Southeast Asian Nation (ASEAN) countries. Most of the FDI was in the primary (mostly agricultural) sector, the secondary (manufacturing) sector was second and the tertiary (services) sector was third during the SLORC government period between 1988 and 1997. After several burdensome trade restrictions were lifted in 2016, the business environment is set for dramatic improvement. The resultant new environment has substantially eased the way for international trade and investment and has provided a better selection of business partners. Myanmar is now encouraging an export-driven growth strategy through promoting FDI inflows. This study seeks to highlight the evolution of Myanmar's trade structure and foreign direct investment to promote economic development.

1.2. Historical Background

After the British annexation of Lower Burma in the early 1850s, Upper Burma controlled foreign trade, and Lower Burma adopted a free trade policy. Mali (as cited by Myat Thein (2004)) said, "Laissez-faire and competitive enterprise, two adjuncts of Anglo-Saxon liberalism, were the basic principles of commercial policy of British rule in Burma. As the Suez Canal opened in 1869, Myanmar had some experience in foreign trade as an export economy and the largest rice exporter in the world at the time. The general trade patterns of Myanmar and other Southeast Asian countries were the same at the time.

In 1957, U Nu welcomed the active participation of private enterprises in the national economy by guaranteeing them against nationalization for ten years and the government discouraged all economic activities of foreigners. Myanmar's trade sector flourished considerably with 11 agricultural products accounting for about 44% of total import, and an estimated 50% of GDP being related to export in parliamentary democracy period. As for the composition of export, rice products became more prominent in the post-war years than in the pre-war period. Rice was the major earner of foreign exchange and accounted for more than 50% of export earnings and forest products, mainly teak, came to be the second most important export. In 1957-58, the trade surplus disappeared or became minimal level due to the declining unit value of export. Many studies mentioned that the commercial policy of the government to levy very low tariffs on the import of industrial raw materials and machinery led many entrepreneurs to set up small-scale factories to evade the relatively higher tariffs on finished goods and these industries were very import dependent import substituting industries.

Table 1.1 compares the composition of trade between 1938-39 and 1962-63. Rice and rice products were by far the largest portion of trade.

Table 1.1 Composition of Trade (1938-1962, %)

Products	1938-39	1962-63
Rice and Rice Products	46.7	67.3
Other Agricultural Products	6.7	17.2
Oil	22.8	-
Timber	6.9	10.5
Metals and Ore	11.9	3.3
Others	5.0	1.7
Total	100	100

Source: Myat Thein (2004) Economic Development of Myanmar, p 31

After the Revolutionary Council took over power in 1962, the government adopted the "Burmese Way to Socialism" as its political ideology and pursued a self-reliant socialist economy. The government controlled the trade sector as a monopoly handled by state producers. Export were indirectly taxed by maintaining national buying prices of commodities below their international prices by State Owned Economic Enterprises (SEE). Import were managed under government priorities and the availability of foreign exchange. However, rice export fell sharply, and this decline directly led to a drastic decline in export earnings and indirectly led to a decrease in import, savings, investment, and growth in GDP. The value of import was mainly determined by export revenues due to the government neither eager to take official development assistance (ODA) nor to borrow substantially from abroad. The shortage of foreign exchange limited the amount of consumer goods that could be imported, and a black market appeared. External trade by the private sector was conducted by market-determined parallel exchange rates (Mya Than and Myat Thein (2004)). In the early 1980s, Myanmar's

external trade direction changed slightly. The economic situation in the country had worsened, and it gave rise to three distinct economies: the nominal official economy, and two *hmaung-kho* (literally: "taking refuge in the dark") black-market economies in 1967 Myat Thein (2004).

1. 3. Trade Flow and Structure from 1988 onwards

1. 3. 1 Trade Flow and Structure in Market-Oriented Period

After the State Law and Order Restoration Council (SLORC) government took over political power in 1988, it introduced a market-oriented economic system and became outward-looking in orientation. The SLORC government set encouraging private investment and entrepreneurial activity, opening the economy to foreign direct investment and promoting export as the main objectives of economic reforms. In 1989 foreign trade was liberalized to allow private participation and an "open-door" policy towards FDI and foreign trading firms. The state monopoly on both domestic and foreign trade was abolished, making way for private trading Tin Maung Maung Than (2007). Exporters and importers had permission to be registered and getting permission for foreigners to set up companies, opening the economy to direct foreign investment and promoting export were key points for trade development.

The government introduced an "import first and export later" system, allowing foreign companies to import commodities for sale on a consignment basis, In 1996, the government decided on three basic principles to guide trade policy: Trade activities 1) should be in the interest of the State and the people, 2) should not be a burden on the people, and 3) should envisage a long-term stable trading system rather than gaining short-term profit. The "Import first and export later" scheme has varied over time due to various economic and political situations. Some export products such as agricultural products, forest products, petroleum

products, and precious stones and minerals are controlled by SEEs. Importers can import all the same products that are controlled by importing SEEs and the Ministry of Commerce. The official exchange rate only applies to within the public sector, and the private sector has no chance for any allocation of foreign exchange at the official exchange rate. It was difficult to conduct normal trade and economic relations with the outside world at the official exchange rate. However, the open-door policy generated significant changes and trade volume with neighboring countries expanded.

1. 3. 2 Trade Flow in the Democratic Government Period (2011-2015)

While adopting a free trade policy, the new democratic government made many reforms to all sectors of the economy including trade. To promote the external sector and accelerate integration into the world economy, the government tried to open the economy more freely and revised trade-related legislation such as preparing a competition law, a consumer protection law, and comprehensive intellectual property legislation. To develop trade, the government set four main objectives: 1) To support internal and external trade activities for the economic development of the country, 2) To upgrade the commercial efficiency of public and private trading houses, 3) To increase the foreign exchange earnings of the country by export promotion, and 4) To encourage the trade-related activity of cooperative and private entrepreneurs. The government formalized border trade by designating official points of entry and setting up customs and banking facilities.

Table 1.2 shows import increasing over time and the trade balance shows a deficit consecutively from 2012-13 onwards. Export volume also increased considerably although import increased parallel to export and have generated a long-term trade deficit. Currently,

import is steadily increasing, and the trade balance has been in deficit up to January 2018, although the deficit gap has slightly decreased compared to 2016-17. An export value smaller than import value for two years and a trade balance still in deficit shows Myanmar was still a high importer of capital goods and intermediate goods during those years.

Table 1.2 Myanmar External Trade (2011-12 to 2017-2018 January) US $ in millions

Years	Export	Import	Total Trade	Surplus/Deficit
2011-2012	9,135.6	9,035.0	18,170.6	Surplus
2012-2013	8,977.0	9,068.9	18,045.9	Deficit
2013-2014	11,203.9	13,759.5	24,963.4	Deficit
2014-2015	12,523.7	16,633.1	29,156.8	Deficit
2015-2016	11,136.9	16,577.9	27,714.8	Deficit
2016-2017	11,999.0	17,211.0	29,210.0	Deficit
2017-2018 (JAN)	11,912.0	15,398.0	27,310.0	Deficit

Source: Myanmar Customs Department

Table 1.3 Myanmar Export Structure (2013-14 to 2017-18 January) US $ in millions

Commodity	2013-14	2014-15	2015-16	2016-17	2017- 18 (JAN)
Agricultural Products	2661	2920	2616	2928	2525
Animal Products	15	8	8	11	34
Marine Products	516	421	469	582	562
Mineral Products	1339	1499	968	1011	1254
Forest Products	948	94	213	247	179
Manufactured Products	4638	6525	5734	5478	5469
Others	1087	1057	1129	1743	1891
Total Export	11204	12524	11137	11998	11912

Source: Myanmar Customs Department

Table 1.3 shows the share of manufactured products has increased to roughly 50% of total export volume. Agricultural products were the second largest export category during the listed period, and mineral products decreased sharply in 2015-16. The US released its sanctions,

which gave Myanmar favorable trade conditions such as a considerable improvement in the industrial sector and an increase in FDI inflows, and manufactured products were the largest export category. However, agricultural products still dominated with the second largest share in Myanmar's export structure.

Table 1.4 shows capital good and intermediate goods import are higher than other categories due to Myanmar's need to set up and develop the industrial sector and to promote export. capital goods and consumer goods import slightly decreased from 2016-17 to 2017-18 January and the total value of import also decreased.

Table 1.4 Import Structure of Myanmar (2013-14 to 2017-18 January) US $ in millions

Commodity	2013-14	2014-15	2015-16	2016-17	2017-18 (JAN)
Capital Goods	5692	8038	8254	6920	5451
Intermediate Goods	5684	5682	4821	6165	6200
Consumer Goods	2384	2913	3503	4126	3747
Total Import	13760	16633	16578	17211	15398

Source: Myanmar Customs Department

1. 3. 3 Trade Flow in the Current Democratic Public Government Period (2015 onwards)

After the November 2015 election, the National League for Democracy (NLD) become the country's first civilian government and has allowed for significant economic reforms in both domestic and external sectors. Trade and investment in Myanmar have soared, buoyed by ongoing efforts to liberalize the economy and a successful political transition. The export promotion policy of the government was the extension and exploration of foreign markets to

promote the export of traditional and value-added products by utilizing natural and human resources effectively.

Table 1.5 Top Ten Trade Partners (2015-16 to 2018 January) US$ in millions

Country	2013-14	2014-15	2015-16	2016-17	2017-18 (Jan)
China	7033	9712	10992	10805	9684
Thailand	5666	5711	4866	4288	4074
Singapore	3604	4895	3696	2967	3100
Japan	1809	2305	1846	2032	1558
India	1636	1340	1712	1943	1257
Malaysia	948	1009	750	980	931
Indonesia	499	636	742	827	840
Korea	1570	863	657	866	635
Usa	104	544	197	691	618
Vietnam	281	321	347	494	592

Source: Myanmar Ministry of Commerce

Import policy emphasized the importation of capital goods as a priority, raw materials for production, other essential products to provide for public health and export promotion. The business environment was set for dramatic improvement after several heavy trade restrictions were lifted in 2016. Myanmar was added to the US's Generalized System of Preferences (GSP), which exempted US-bound export from high import taxes, which were another significant trade restriction. Although China has been the largest trade partner for Myanmar for a long time, its overall significance has decreased compared to previous years. Thailand is the second and Singapore is the third largest trading partner at present. Bilateral trade with Japan increased in 2017-1018. (see Table 1.5).

1. 4. Overview Trade Pattern and Policy

The importance of foreign trade in Myanmar can measured by the "trade openness ratio", which estimates how an economy is open to attract foreign trade. Foreign trade did revive during the parliament regime overthrown in 1962. With the collaboration of some enlightened socialist scholars, the government drafted an economic plan that strongly advocated an "outward-looking" development strategy, in part inspired by the strong free trade views of Dr. Hla Myint. This plan was, however, rejected. Until 1988, Myanmar adopted an inward-looking and self-reliant pattern of development policy, all the vital means of production and distribution were nationalized, and foreign trade became a monopoly of the state. Since foreign trade came to be a monopoly of the state in 1962, export volume and value declined significantly from 1964-65 to 1970-71. Myanmar's evolution of trade policy and structure from 1990 onwards is shown in Table 1.6 with some facts to compare each period's policy and structures.

The long-term plan began with a Four-Year Plan in 1974 which was together comprised the Twenty-Year Plan (1974-75 to 1993-94). Although it emphasized industrialization, it allowed spending on the agricultural sector and addressed inefficiency in public sectors (Mya Than and Joseph L.H. Tan (1990)). Another reason for export volume decreases in that period was the 1973 world oil price shock, which hit the Myanmar economy and external sector. Export volume rapidly decreased from US$113 million in 1973-74 to US$53 million in 1974-75. In the early 1980s, the direction of Myanmar's external trade showed little change from the past. (see Figure 1.1 and Table 1.7).

Table 1.6 Evolution of trade policy in Myanmar (1990 onwards)

Years	Economic System	Trade policy	Instruments of Trade	Sanctions
1990-2010 Military Regime	Market oriented economic system	Liberalization of domestic and foreign trade, active participation of private business in foreign trade	"Import first and export later" scheme, export and import on a consignment basis	EU-US sanctions
2011-2015 Democratization	Market economic system	Export promotion free trade policy (open-door policy) Inviting foreign direct investment to develop trade to promote export	Reduction and exemption of commercial tax on export, income tax on income from CMP export, state trading monopolies abolished	EU reinstated GSP, US allows resumption of the GSP
2016 to present Democratic Public Government	Market economic system	Free trade policy export driven growth strategy	To promote exporting value-added goods and finished goods instead of exporting raw materials	Sanction release

Source: Author's creation

After 1988, the Myanmar government undertook reforms intended to enhance the transparency of trade-related policies and regulations, thereby increasing public accountability. A Foreign Exchange Certificate (FEC), equivalent to the US one-dollar value, was introduced in February 1993. In April 2012, the government formally abolished the dual

Table 1.7 External Trade (1948-49 to 1985-86)

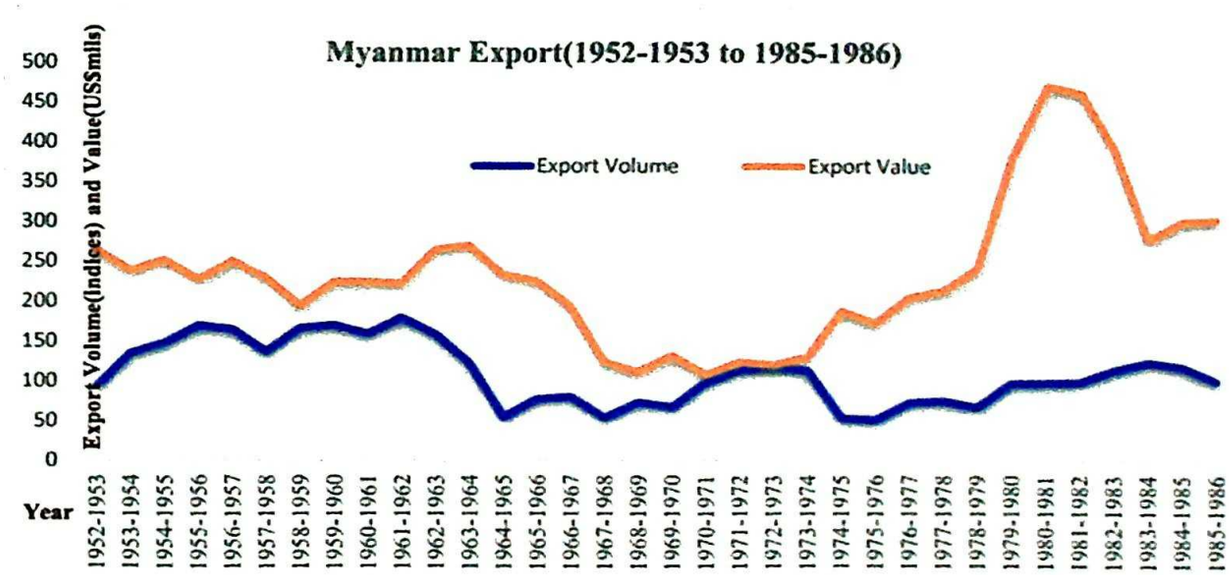
Year	Export Volume	Export Value	Import Value	Balance Of Trade
	Indices (base year 1985=100)	US $ in millions	US $ in millions	(+, -)
1948-1949		229	176	53
1949-1950		222	113	109
1950-1951		139	91	48
1951-1952		212	137	75
1952-1953	93	264	192	72
1953-1954	134	238	178	60
1954-1955	147	251	204	47
1955-1956	169	227	181	46
1956-1957	165	250	198	52
1957-1958	136	229	297	-68
1958-1959	166	194	204	-10
1959-1960	170	224	223	1
1960-1961	159	224	259	-35
1961-1962	179	222	215	7
1962-1963	158	265	219	46
1963-1964	122	270	234	36
1964-1965	54	233	271	-38
1965-1966	77	225	247	-22
1966-1967	80	194	158	36
1967-1968	53	124	124	0
1968-1969	73	111	114	-3
1969-1970	67	132	165	-33
1970-1971	98	108	155	-47
1971-1972	114	124	168	-44
1972-1973	118	120	133	-13
1973-1974	113	130	106	24
1974-1975	53	188	176	12
1975-1976	51	173	197	-24
1976-1977	73	206	177	29
1977-1978	75	214	241	-27

1978-1979	67	242	307	-65
1979-1980	97	383	319	64
1980-1981	98	472	353	119
1981-1982	99	462	373	89
1982-1983	114	391	409	-18
1983-1984	124	278	268	10
1984-1985	118	301	239	62
1985-1986	100	303	283	20

Sources: Myat Thein (2004) Economic Development of Myanmar, page -75.

exchange rate system, which had hindered foreign trade and investment. The current exchange rate is a "managed float regime" that closely reflects the true market rate. Nevertheless, the private financial sector, foreign exchange market, and regulatory framework remain significantly underdeveloped.

Figure 1.1 Myanmar Export (1952-1953 to 1985-1986)



Sources: Myat Thein (2004) Economic Development of Myanmar, page-75.

Dunn and Mutti (2004) stated that a country's terms of trade (i.e. the ratio of an index of a country's export prices to an index of import prices) are determined in the world markets for its export and import. Myanmar is a primary products exporter and manufactured and

investment goods importer at unfavorable terms of trade. Many developing countries experience that their terms of trade are unstable because they export large volumes of a small number of primary products into highly competitive markets. Moreover, sometimes, the home country cannot be offset by a nominal depreciation or devaluation of money due to rapid inflation. From 1980 to 1985, Myanmar's export volume and values roughly followed this trend. After the military government took power in 1988, export values were larger than the export volume.

Table 1.8 External Trade (1980-2017)

Year	Export Volume		Import Volume		Export Value	Import Value	Balance of Trade
	Change (%)	Indices Base year 1985=100	Change (%)	Indices Base year 1985=100	US $mils	US $mils	US $mils
1980	17.041	100.29	4.094	100.79	415	785	-370
1981	1.596	101.92	11.043	113.30	446	823	-377
1982	-0.17	101.74	11.954	128.69	391	409	-18
1983	15.579	120.52	-18.702	108.41	378	268	110
1984	-10.593	108.98	-3.005	105.25	301	239	62
1985	-8.975	100.00	-5.249	100.00	303	283	20
1986	19.564	119.56	-18.513	81.49	288	304	-17
1987	-18.677	97.23	0.281	81.72	219	268	-50
1988	10.701	107.64	-20.77	64.74	147	244	-97
1989	27.734	137.49	-8.459	59.27	215	194	20
1990	14.456	157.37	47.997	87.71	409	668	-259
1991	-2.774	153.00	-8.642	80.13	527	1,068	-541
1992	37.068	209.71	-0.478	79.75	684	1,046	-362
1993	15.751	242.75	41.806	113.09	864	1,280	-416
1994	-2.663	236.28	11.846	126.49	940	1,538	-598
1995	-2.479	230.43	29.536	163.85	1,198	2,342	-1,144
1996	16.268	267.91	8.038	177.02	1,183	2,678	-1,495
1997	27.731	342.20	29.123	228.57	1,132	2,862	-1,729
1998	28.34	439.19	25.462	286.77	1,139	2,358	-1,220
1999	54.634	679.13	-2.607	279.29	1,393	2,528	-1,134

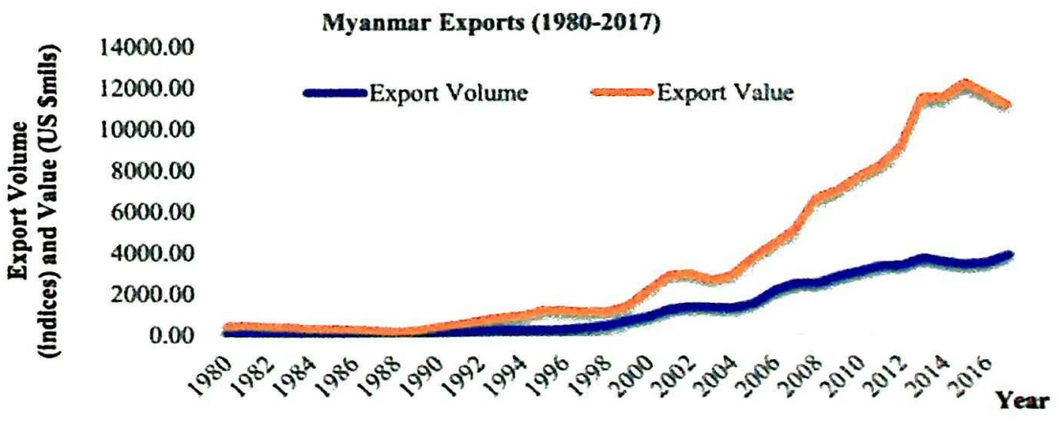
2000	30.39	885.52	-10.065	251.18	2,174	3,221	-1,047
2001	40.772	1246.56	21.467	305.10	2,901	2,799	102
2002	9.799	1368.71	-15.563	257.62	2,956	2,856	100
2003	-3.054	1326.91	-6.412	241.10	2,656	2,780	-123
2004	-2.16	1298.25	-16.748	200.72	2,896	2,741	155
2005	17.46	1524.93	-2.9	194.90	3,765	2,707	1,058
2006	41.535	2158.30	44.598	281.82	4,415	2,887	1,528
2007	15.38	2490.25	81.707	512.09	5,146	3,790	1,356
2008	0.285	2497.35	21.133	620.31	6,650	4,652	1,997
2009	13.116	2824.90	2.334	634.79	7,006	3,669	3,337
2010	8.958	3077.95	12.711	715.47	7,704	4,278	3,426
2011	8.597	3342.57	23.005	880.07	8,208	8,712	-504
2012	1.008	3376.26	18.071	1039.10	9,160	8,004	1,156
2013	10.747	3739.11	17.258	1218.43	11,543	12,200	-656
2014	-5.318	3540.26	-13.705	1051.45	11,551	16,459	-4,907
2015	-3.02	3433.34	14.028	1198.94	12,247	17,132	-4,885
2016	2.72	3526.73	6.143	1272.59	11,725	15,921	-4,196
2017	10.444	3895.06	10.015	1400.05	11,158	18,051	-6,893

Sources: IMF, Direction of Trade Statistics (May 2018), World Economic Outlook Database (Sept 2011) and World Economic Outlook Database (April, 2018). Following the *IMTS 2010* methodology, export is recorded on free-on-board (FOB) basis, and import are recorded on cost, insurance, and freight (CIF) basis. Reported by current price.

Table 1.8 shows Myanmar's export and import volumes from 1980-2017. This result in higher costs and lowers trade competitiveness for Myanmar's products generate that Myanmar's export are relatively low price primary products and import are high-price manufactured products. To have more favorable terms of trade, the government needs to encourage export processing and manufacturing industries or export promotion. Another weak point for exporters is that they are unsure of being able to get their goods into stable markets in Western countries due to the severe economic sanctions of the US and EU since 2003. Basically, Myanmar's main export products are primary goods such as rice, pulse and beans; forest product like teak; and natural gas (since the 1990s). Garment export expanded significantly in 1999-2000 as well as natural gas export from offshore fields. Natural gas and

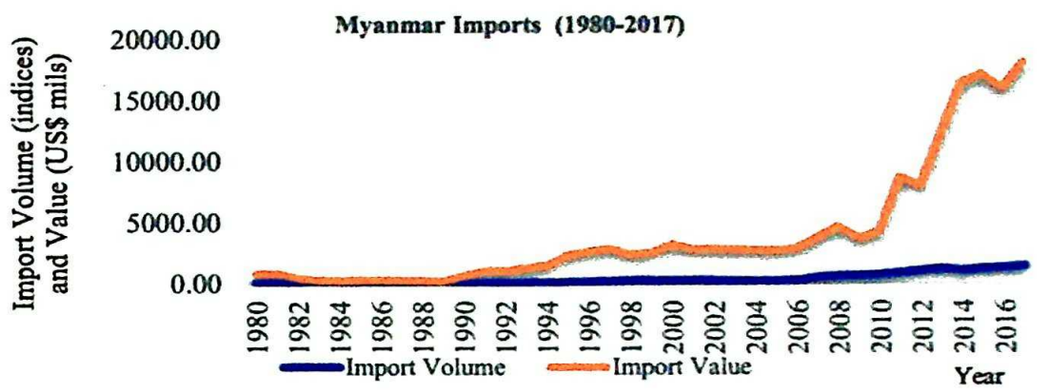
garments together contribute over 40% of Myanmar's export earnings. Garment export have high import contents such as textiles, cloth, yarn and machinery. The main products exported in 2014-15 were gas, garments, base metals and ores. The main products imported were non-electric machinery, transport equipment, refined mineral oil and base metals. Myanmar's main manufactured product export are natural gas and textiles. Its largest mineral export is jade and is one of the world's largest producers of high quality, sought after jadeite. (see Fig 1.2 and 1.3). In 1990, the government imposed many restrictions on trade by controlling foreign exchange, called the "export first and import second" policy. This policy prompted traders to adjust misreporting of trade in accordance with the supply and demand for export earnings. Considering that a multilateral trading system can bring a wide range of opportunities for Myanmar's export and overcome its supply-side constraints, Myanmar's trading policy was based on ASEAN. The Democratic government adopted an export promotion free trade policy and invited foreign direct investment to promote the trade sector. Trade volumes in Myanmar have soared over the past decades.

Figure 1.2 Myanmar Export (1980-2017)



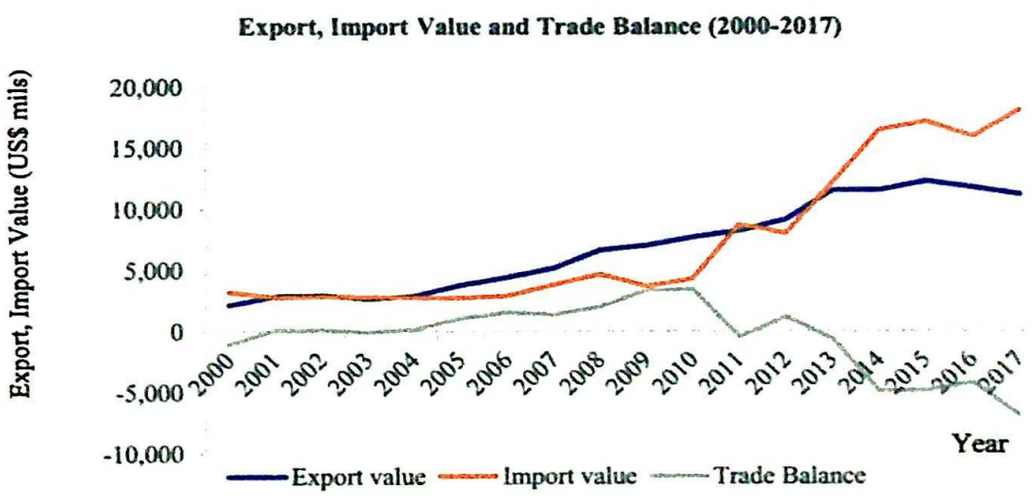
Source: IMF, World Economic Outlook Database (2011, Sept) and (2018, April)

Figure 1.3 Myanmar Import (1980-2017)



Source: IMF, World Economic Outlook Database (2011, Sept) and (2018, April)

Figure 1.4 Export Value, Import Value and Trade Balance (2000-2017)



Source: IMF, World Economic Outlook Database (2018, April)

The European Commission (EC) (The Report: *Myanmar 2017*) reported the Myanmar's total trade rose by 32.8%, 28.1% and 24.5 % in 2010, 2011 and 2012, respectively. Trade continued recording double-digit growth in 2013-14. Import growth drove growing trade volumes, as well as an expanding trade deficit, and the EC reported that import to Myanmar rose significantly during that period. Manufactured product export increased in export share

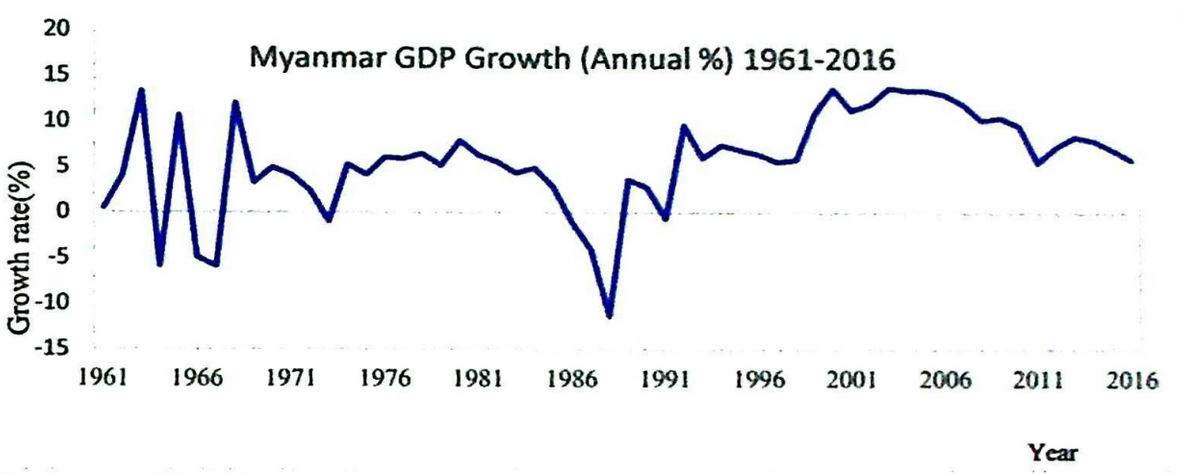
to roughly 50% of total export volume. Agricultural export was the second largest category in 2013-14, and mineral products decreased sharply in 2015-16 (Figure 1.4).

Myanmar's main trade partners are Asian countries, with China and Thailand being the most important export destinations. The EU has had sanctions in place since the 1990s. Japan did not follow the EU sanctions but limited the amount of assistance provided to Myanmar. US and EU sanctions strongly impacted and inhibited the economy and held back certain trade, investment and business activities. After heavy trade restrictions were lifted in 2016, the business environment was set for dramatic improvement. (Figure 1.5).

Figure 1.5 Myanmar's Main Trade Partner (2017 - 2018 January) US$ in millions

Source: Myanmar Customs

Figure 1.6 Myanmar GDP Growth (Annual %) 1961-2016



Source: World Bank

Export volumes are tied to explain business cycles, rising with expansions and declining in recessions. Myanmar's GDP growth rate substantially declined in 1964, 1967 and 1988. The import substitution industrialization policy not only inhibited the promotion of export, but imports as well. This may have had a strong impact on the nation's GDP growth but then recovered by 1968. Because of the political instability in 1988, the GDP growth rate seriously dropped. However, it recovered starting in 1989 although it slightly fluctuated throughout the 1990s. Export and import values have dramatically risen since 2000 and especially export values substantially increased during that period. In 2011, the GDP growth rate declined but after that slightly changed until 2016 (Figure 1.6).

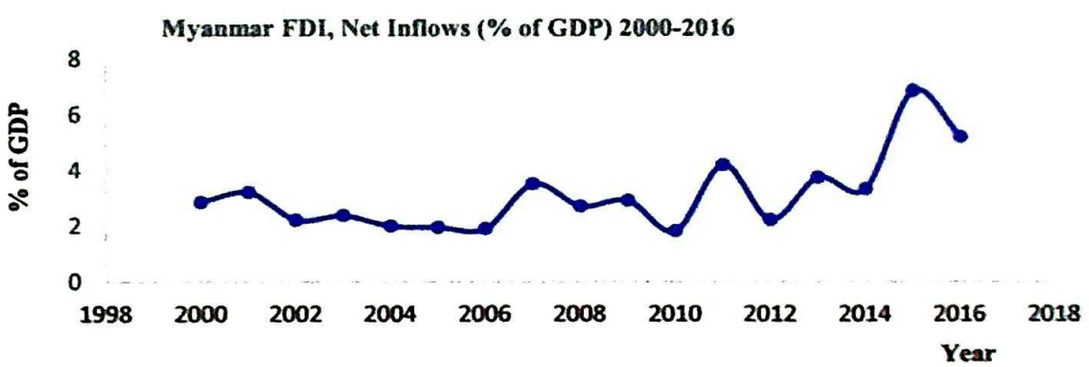
1.5. Foreign Direct Investment in Myanmar

1.5.1. Background

After the annexation of Lower Burma to British India, there was an extensive influx of foreign capital, business, and laborers. Famous Burmese teaks attracted European countries

such as the Portuguese. Before the Second World War, Myanmar received a very high flow of foreign investment and operated a huge foreign trade sector compared with other Southeast Asian countries. In 1955, The Anti-Fascist People's Freedom League (AFPFL) government invited foreign and local private businesses to operate in designated industries, guaranteed against nationalization for a period of ten years. After enacted 1962 the Burma Investment Act, the policy of "going it alone" under the mistaken notion of self-reliance significantly limited the size of total investment and the rate of economic growth (Tun Wai, as cited by Myat Thein, 2004).

Figure 1.7 Myanmar FDI, net inflows (% of GDP) 2000-2016



Source: World Bank

Figure 1.7 shows Myanmar FDI net inflows (% of GDP) during 2000-2016. Net inflows as a percentage of GDP have been trending upwards with slight fluctuations during the democratic government period from 2011-2016. The government has striven for many economic reforms and has actively invited foreign investors to enter Myanmar, thus the FDI inflows have increased later in the period shown.

To shape the market-oriented economic policy, the government enacted the Foreign Investment Law (FIL) in November,1988. FIL aimed to bring in more foreign capital and offer investment incentives and guarantees to foreign investors. FIL was revised in 2012. To overcome infrastructure bottlenecks, attract FDI and increase export, the Myanmar Economic Zone Law was enacted in 2011. This law provided additional tax incentives for investment in several strategic locations along Myanmar's 1,300-mile-long coast.

1. 5. 2. Recent FDI trends

FDI has increased based on the development and diversification of the economy from agriculture and natural resources into one oriented more towards manufacturing and services while reintegrating into the world economy. Not only local and domestic investment increased but foreign direct investment also surged. FIL was revised in 2016 to improve foreign capital and import technology required to improve the Myanmar economy. The Myanmar government is promoting and striving to implement a path of economic reform and is well placed to learn from the experiences of other ASEAN member countries about developing and facilitating investment in crucial sectors.

Recently, the civilian government of Myanmar promulgated the new Myanmar Investment Law (MIL), signed into law by the president on October 18, 2016. MIL combines the CIL with the FIL. The law aims to transform Myanmar's current investment framework, merging regulations for foreign and domestic investors into a single law, as well as create a new project approval processes, tax incentives and land use regulations aimed at bolstering flagging foreign direct investment flows. The new law represented a critical component of

œconomic liberalization, with Reuters reporting that major companies were waiting to see the llegislation before committing funds to new projects.

Table 1.9 Permitted Foreign Direct Investment (1988-89 to 2017-18) US$ in millions

Investment	1988-1989 to 2010-2011		Up to 2017 (December)		Total	
	no.	amount	no.	amount	no.	amount
FDI	454	36,038	968	39,096	1422	75,134
SEZ	-		87	1,223	87	1,223
Total	454	36,038	1055	40,319	1509	76,357

Sources: Myanmar Directorate of Investment and Company Administration (DICA).

The Directorate of Investment and Company Administration (DICA) shows that the total permitted amount of FDI for the period from 1988 to December 2017 reached US$ 76.3 billion (see Table 1.9). A new strategy to attract investment along with a growing percentage of inward investment has gone towards Myanmar's new special economic zones (SEZs). The SEZ Law outlines investor incentives at three SEZs operating in Myanmar: Thilawa, Kyaukphu, and Dawei. As the permitted amount of foreign investment, oil and gas sector is the largest, manufacturing is the second, and power is the third largest position during 2011-12 to 2017(December) that shown in Table 1.10.

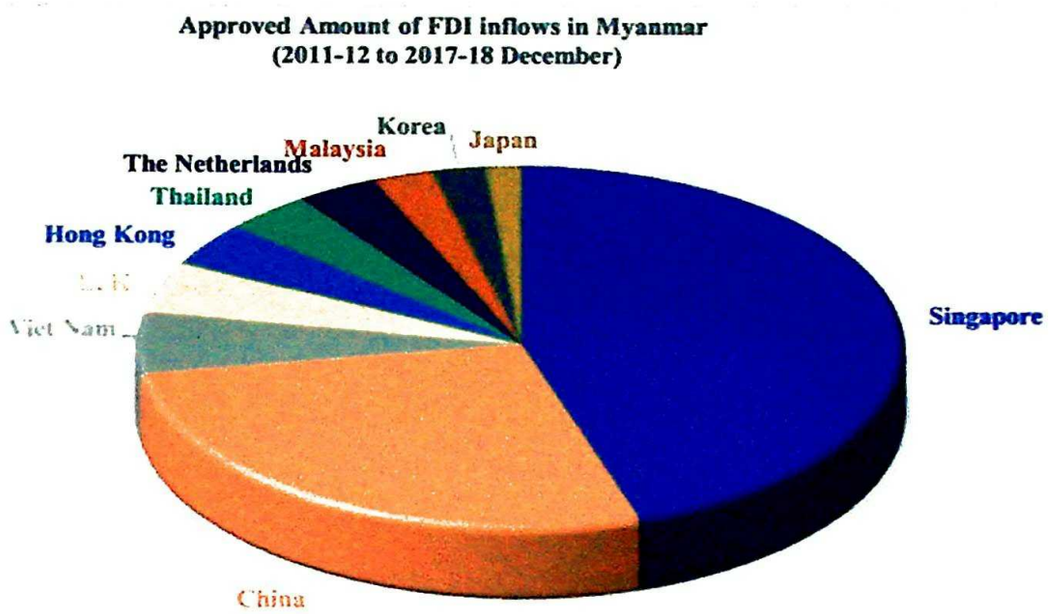
Table 1.10 Yearly Approved Amount of Foreign Investment (by Sector) US$ millions

Sector	2015-16	2016-17	2017-18	2011-12 to 2017-18 (Dec)
Manufacturing	1069	1180	1556.48	7568
Power	360	910	363	6428
Oil and Gas	4818	-	-	8595
Hotel and Tourism	288	404	154.44	1940
Mining	29	-	1.31	104
Agriculture	7	-	131.29	208
Livestock & Fisheries	8	97	23.81	257
Transport &Communication	1931	3081	653.1	8535
Real Estate	729	748	1062.44	3760
Industrial Estate	10	-	34.04	44
Other Services	236	231	804.42	1662
Total	9485.62	6649.81	4784.31	39101

Sources: Myanmar Directorate of Investment and Company Administration (DICA)

With many changes of policy reform concerns with foreign investment, approved investment increased in current period. Figure 1.8 and Table 1.11 show the approved amount of FDI inflows in Myanmar from 2010-11 to 2017-18 by country. Singapore provided the largest FDI and Thailand was the second most invested country in Myanmar. The top 10 investing countries are Asian countries except the UK and the Netherlands.

Figure 1.8 Approved Amount of FDI Inflows into Myanmar (2011-12 to 2017-18) US$ in millions



Sources: Myanmar Directorate of Investment and Company Administration (DICA)

Table 1.11 Yearly Approved Amount of Foreign Investment (by country) US$ millions

Country	2015-16	2016-17	2017-18	2011-12 to 2017-18 (Dec)
Singapore	4251	3821	1726	16854
China	3324	483	1291	10243
Viet Nam	5	1386	19	2075
U. K	75	54	209	1679
Hong Kong	225	214	212	1468
Thailand	236	423	108	1423
The Netherlands	438	5	533	1288
Malaysia	257	21	21	979
Korea	128	66	233	872
Japan	220	60	96	576

Sources: Myanmar Directorate of Investment and Company Administration (DICA).

1.5.3. Future FDI Trends

Myanmar has many favorable factors to attract foreign investors' attention. It is strategically located between two economic giants, China and India, borders growth markets like Thailand. Myanmar has access to the Bay of Bengal as well as she is the second largest land area in Southeast Asia and a relatively youthful labor populous country. Some massive obstacle to attracting investment in the manufacturing sector are insufficient power, communications, roads, railways, bridges and ports. Yangon and Mandalay are the top two cities regarding population and the accumulation of companies that continue to attract new investments. It is highly probable that economic activity in Yangon will spread out to the Bago and Thilawa Special Economic Zone. Japan has given assistance to support infrastructure for the SEZs and to operate a one-stop service center in Thilawa to compete with other SEZs in neighboring countries and to attract many foreign companies. Thilawa's image as an SEZ has been developing and the amount of FDI in the Thilawa SEZ increased significantly in 2018. Japan is the largest investor country in the Thilawa SEZ. Economic experts expect that investors from the US and some European countries will invest in the Thilawa SEZ in the future.

1.6. Conclusions

Because of unstable policy, complicated political situations, the encouragement of foreign trade was hindered in the late 1990s. Myanmar has had some failures of achievability, reliability, suitability, simplicity, and stability in implementing trade policy. A multilateral trading system i.e. the system which allows large number of countries to agree to trade with each other. The World Trade Organization (WTO) is part of this system and it can bring a wide

range of opportunities for Myanmar's export and to overcome its supply-side constraints. However, Myanmar's trading policy was based on ASEAN in past. According to the several factors assess on 2018's investment position, Myanmar was depressed by global commodity prices and reduce India's agriculture import quotas although Myanmar trade and investment has expanded rapidly since 2011. However, according to the Myanmar Report (2018), the new opportunities created by China's Belt and Rod Initiative are set to play a significant role in supporting Myanmar's trade and investment growth over the medium term. The decision demonstrated Myanmar's commitment to the World Trade Organization (WTO) policies and boded well for future liberalization (The Report, Myanmar (2013), Oxford Business Group). Attracting and benefit from FDI is a key challenge for Myanmar. Myanmar need to set appropriate general policies to enhance the economic growth. These are stable macroeconomic policy, effective financial markets, better infrastructure facilities, more reliable trade, and investment policy, supporting skilled labors to develop human resource development and so forth.

CHAPTER II

The Influential Determinants of FDI Inflow in Myanmar

2.I. Introduction

Other things remaining the same, the effectiveness of FDI policy in any country may be gauged by examining the trends in foreign investment approvals and actual inflow. A great deal of evidence shows that FDI has contributed significantly to the economic and industrial development of ASEAN economies. FDI flows are often accompanied by valuable resources such as technology, organizational capability, managerial skills, and marketing know-how. In the last two decades, the involvement of developing countries in international trade has increased while FDI has expanded rapidly as capital inflows.

Many different factors affect the volume and distribution of FDI in developing countries around the world. Many researchers have found that the primary determinants of major FDI inflows include political stability, favorable tax and subsidy policies, the existence of an appropriate business environment, better administrative procedures and a low level of corruption. Since globalization, the world economy has been characterized by increased integration and ties between countries in which foreign direct investment (FDI) constitutes a business phenomenon of vital importance and frequency. FDI contributes to the improvement of macroeconomic outcomes of host countries and from there it can enhance a nation's economic growth.

According to international reports, Myanmar is one of the most difficult markets in the world in which to operate a business even though the government is implementing political

and economic reforms aimed at promoting the country's participation in the global economy. Like other ASEAN countries, Myanmar has built its development strategy on export-led development based partly on FDI. However, FDI has played less of a role in Myanmar than other countries in the region. Previously, due to the impact of economic sanctions, potential investors from many OECD countries did not consider Myanmar as a location for investments. Myanmar experienced the largest economic impact among the countries in the Mekong region. Myanmar has a large amount of economic potential from the benefits of economic integration and infrastructure development in the Mekong region.

Most of the investment that Myanmar has received has gone to natural resource sectors with only a negligible role for foreign investors in manufacturing or services (OECD Investment Report, 2014). Nowadays, the Democratic government is adopting an open-door policy and favors creating economic opportunities to build a modern developed nation. The objective of this paper is to point out the influential determinants of FDI inflow in Myanmar using the current economy as a case study. This study is made up of the following four sections; exploring some perspectives from previous literature, current FDI trends in Myanmar, the influential determinants of FDI in Myanmar, and FDI policy implications.

2.2. Previous Literature Review

Previous studies have focused on the pull factors, features of the host countries that attract or deter FDI inflows, but foreign investment is not attracted to less developed countries except in cases with cheap labor or abundant raw materials. There has been a proliferation of policy-oriented studies seeking to make a country's investment climate more attractive to both

foreign and local investors. Foreign direct investment contributes to the development of many countries by improving infrastructure, transferring technical skills, raising entrepreneurial abilities and elevating financial resources regarding both government revenue and foreign exchange.

Many researchers have analyzed FDI and foreign trade with the different points of view. This study mainly points out the determinants of FDI in developing countries. In previous studies, the determinants of FDI have generally fallen into three categories; a focus on core factors influencing the decision to invest in a country or industry, a more macro-oriented functional relationship between FDI and possible determinants, and finally, why FDI is preferred to other forms of investment based on different resource allocation decisions. When analyzing the main determinants of FDI, country-specific characteristics are widely accepted, especially for factors related to the host country market.

FDI analysis is often based on either horizontal foreign direct investment or vertical foreign direct investment. Horizontal foreign direct investment is often done by multinational corporations which replicate their production processes in foreign facilities located near large customer bases. Vertical foreign direct investment is based on the theory of comparative advantage and it is one of the fastest-growing types of FDI into developing countries from developed countries. Vertical FDI requires a substantial fixed cost investment in a foreign affiliate in a country with the appropriate characteristics (Krugman, Obstfeld & Melitz, 2012).

A nation's chance of attracting and receiving FDI depends on the development of the host country's infrastructure and institutions by making efforts at fundamental reform.

Yousaf, Hussain & Ahmad (2003) analyzed the volume and determinants of FDI in a sample of 15 developing countries. The FDI flow into developing countries took various paths and its volume was modest at the beginning of the 1980s but has tended to rise in subsequent years. Ferris, S.P., Thompson, G.R. & Valsan, C. (1997) analyze FDI in Guyana in Latin America and pointed out the important determinants of FDI compared with 11 other Latin American countries. Goldberg & Kolstad (1995) analyzed exchange rate variability and demand uncertainty and explored the implications of short-term exchange rate variability for FDI flows. Real exchange rate variability influences the location of production facilities for risk-averse parent companies and fixed productive factors. Yu-Chen & Santanu (2011) studied the relationship between labor cost and FDI in India, specifically the effects of foreign-owned firms paying higher wages than their domestic counterparts.

2.3. The Current Foreign Direct Investment Situation in Myanmar

Myanmar is the second largest country in Southeast Asia, and the 12th most populous country in all of Asia. With 55% of people under the age of 30, Myanmar's population is well positioned to capitalize on an expansion of the economy. Although the international record on natural resource-based exports as a means of promoting economic development is unsure, Myanmar's natural resource exports can play a vital role in development, and a well-regulated resource sector can generate high growth in income, investment, and trade while laying a foundation for the diversification of exports and domestic activity over time.

After the Democratic government came into power in 2011, the United States, Japan, and ASEAN have started to seek ways to invest in Myanmar. According to data from the Asian

Development Bank (ADB), the country's GDP expanded by 8.5% in 2014-15, and the government estimated 2015-16 GDP growth at 9-10%. In 2016, GDP reached US$62.6 billion. Thirty years ago, there was very little foreign investment and Myanmar only engaged in small international trade. On November 30, 2015, the Directorate of Investment and Company Administration (DICA) stated that the total amount of FDI from 1988 to November 2015 had reached US$58.2 billion, including manufacturing enterprises and oil and gas companies which were responsible for one-third of the total investment, at US$19.6 billion. However, this amount has seen a significant drop after FDI reached a peak in 2014.

After adopting a liberalization policy, the government continues to open the economy to attract FDI and enhance trade. "Liberalization is a key word here right now. We have grown rapidly in recent years, and we expect to see increased economic activity for the foreseeable future", said U Aung Naing Oo, secretary of the Myanmar Investment Commission (MIC) and director-general of the Directorate of Investment and Company Administration (DICA). The Report Myanmar (2015).

2.4. The influential determinants of FDI in Myanmar

Previous studies have focused on the pull factors, features of the host countries that attract or deter FDI inflows, but foreign investment is not attracted to less developed countries except in cases with cheap labor or abundant raw materials. FDI may be one key element for the development of Myanmar in the future. The government has initiated a broad range of reforms to open its economy to foreign trade and investment. Myanmar has a rich natural resources base, a young labor force and a strategic geographic location between the two economics

giants India and China and stands to benefit from greater global and regional economic integration, including its membership in ASEAN. Many different factors affect the volume and distribution of FDI in developing countries around the world.

2.4.1. Myanmar Investment Law

The government released a draft of the Myanmar Investment Law in February 2015 which had been in the works since 2014 and was ratified by Parliament in 2016. The new law replaced both the 2012 Foreign Investment Law and the Myanmar Citizens Investment Law of 2013 with comprehensive legislation aimed at bringing all investment regulations under one framework. The objective of this law was to develop responsible investment business which does not cause harm to the natural environment, employs human resources, has a high production function for services, trading, technology, agriculture, livestock and industrial sectors. According to the Myanmar Investment Law, the MIC will also evaluate all investment permit applications according to specific key factors including whether the investment will result in a significant level of domestic employment, if the economic activity will involve the import and use of heavy equipment or advanced technology, how much economic activity will be added to the domestic economy and the degree that the economic activity will uplift the living standards of Myanmar's citizens.

2.4.2. Current Financial sector

Financial sector development is still at an early stage in Myanmar. It remains firmly underdeveloped and repressed, with financial intermediation almost entirely dominated by an unsophisticated banking sector. The government has prepared a financial sector roadmap to

foster financial development with a new foreign exchange management law. There are further plans to open the banking industry to foreign participation, and developing the capital market with the launch of a stock exchange in 2016. Moreover, the Central Bank established a regular liberalization program to allow the entry of private domestic banks and the establishment of representative offices for private foreign banks.

In 2012, the Foreign Exchange Management Law was adopted, and it allows both locals and foreigners to deal with foreign currency in Myanmar. According to this law, it requires all foreign exchange transactions to occur through banks that have been authorized by the Central Bank of Myanmar to deal in foreign exchange. As such, foreign investors may now open foreign currency accounts at authorized banks within Myanmar and maintain these accounts abroad, as well as remit foreign currency abroad, subject to the approval of the relevant government authorities. As foreign exchange is absorbed and spent in the economy, the real exchange rate could appreciate, reducing the competitiveness of Myanmar's trade-exposed firms and sectors. Currently, Myanmar faces the devaluation of the kyat, and the exchange rate of the kyat with the US dollar is weaker than previous.

2.4.3. Special Economic Zones

The term Special Economic Zone (SEZ) is used to describe the delineated geographic areas within which have a different legal and regulatory regime relating to business and trading activities. (Responsible Investment in Myanmar, 2017). Nowadays, SEZs are powerfully linked to national economic development plans, and are a base for innovation and new institutions for market economy success. A growing percentage of inward investment has gone towards Myanmar's new special economic zones. SEZs play a central role in Myanmar's

efforts to attract investment and to promote competitive semi-manufactured and manufactured goods with significant local value addition. If the SEZs become successful, they will continue to be a high priority target for the government as a means to attract foreign investment. By September 2015, during the first phase of Thilawa SEZ, launched in 2013, 48 firms had signed contracts to set up operations in Thilawa, with many of those companies involved in garment manufacturing. The second SEZ is in Dawei, situated in southern Myanmar, with another SEZ in Kyaukphyu, in the state of Arakan, and both projects have begun to attract interest from foreign corporations. SEZs offer a variety of investment opportunities for foreign investors.

Table 2.1 Thilawa SEZ Investment (by Sector)

Sr No	Sector	2017-2018		
		Amount	Value (US $ mil)	Percent
1	Manufacturing	6	185	74
2	Trade		47	19
3	Real Estate		8	3
4	Transport and Supporting		7.48	3
5	Services		1.35	0.5
	Total		248.6	100

Sources: Directorate of Investment and Company Administration(DICA) in Myanmar

Table 2.1 shows the sectoral FDI inflow in Thilawa SEZ in FY 2017-2018. The foreign direct investment entered in the manufacturing sector was the largest with 74% of all investment. Currently in the Thilawa SEZ, Japan is the largest investor, contributing 33% of all investment in 2017-2018.

2.4.4. Labor Utilization

According to the 2014 Myanmar Census, 65.6% of the population are of working age (15 - 64 years old). This population is well educated, with a high literacy rate of 93% and wide spread basic competency in English. As a labor abundant country, Myanmar has the comparative advantage of lower labor cost in attracting FDI to export-oriented labor-intensive sectors. There is growing evidence that factors such as the right to collective bargaining, worker safety, education, due process and a commitment to ethical, social and environmental norms provide an attractive and sustainable environment for investment. Although Myanmar's rank in basic literacy rate is high, education and labor skills need to improve in order to attract more FDI.

With the influx of FDI into Myanmar, the government need to confirm the positive effects of creating employment and needs to check whether workers have the ability to absorb and work with standardized technologies. At the same time, technology education and vocational training are crucial for human resource development. As the condition of the Greater Mekong Sub-region (GMS) East-West Economic Corridor and the Three Pagoda Pass Road are improved, and labor costs in Thailand rise, there is a chance for more labor-intensive industry to be relocated to Myanmar. However, the current infrastructures in these locations for investors are still limited.

Table 2.2 The Employment Opportunities from Investment Enterprises (2011-2012 to 2017-2018)

Sr. No.	Fiscal Year	Foreign Investment Enterprises		Nationality's investment Enterprise		Total	
		Domestic	Foreign	Domestic	Foreign	Domestic	Foreign
1	2011/12	6814	465	9015	160	15829	625
2	2012/13	62412	719	18871	198	81283	917
3	2013/14	77597	1373	17269	187	94866	1560
4	2014/15	115500	2587	12626	134	128126	2721
5	2015/16	94922	2341	29418	238	124340	2579
6	2016/17	65830	2019	9743	145	75573	2164
7	2017/18	78146	1964	12612	281	90758	2245
	Total	501221	11468	109554	1343	610775	12811

Sources: Directorate of Investment and Company Administration(DICA) in Myanmar

The availability of adequately skilled labor is crucial for attracting firms engaged in export-oriented FDI. U Maung Nanda Aung, the executive director of Heritage Capital Investment, points out the challenge of finding skilled labor in Myanmar, and that the education level is low compared with the rest of the world. However, currently, employment opportunities are increasing compared due to higher FDI inflow. In the modern global investment climate, investors confer importance to labor and environmental standards, corporate governance, and political stability. (see Table 2.2)

2.4.5. Infrastructure Development

Good infrastructure is not only a driver of FDI inflow, but also a pre-requisite for positive spillovers from FDI onto the host country's economy. If a country's infrastructure is sufficient, the country will have spillover benefits from FDI and attain a higher level of growth.

Therefore, especially for developing countries, the larger the investment in infrastructure, the greater the FDI inflows can lead to even faster growth.

The lack of infrastructure in Myanmar is an important obstacle to meeting the needs of society and to enterprise and economic development. The openness for FDI should be considered with the capacity of the macro economy and the location of Myanmar, compared with other ASEAN countries in various indicators of investment climates. A huge obstacle to attracting investment in the manufacturing sector is insufficient power, communications, roads, railways, bridges and ports. The government has stated that its investment priorities include the construction of road and rail networks, power plants, water treatment plants industrial parks and special economic zones (SEZ) to meet the demand for new infrastructure

Table 2.3 List of existing Infrastructure Enterprises under the Foreign Investment Law

Sr. No	Sector	No.	Investment Amount (US $ in millions)	Percent (%)
1	Power Sector	14	14685.1	63.6
2	Transport Sector(Air)	2	666.2	2.9
3	Transport Sector(Port)	9	527.1	2.3
4	Telecommunication Sector	22	7076.4	30.6
5	Transport Sector (Road)	1	143.2	0.6
	FDI Infrastructure Project	**48**	**23098**	**100**
	FDI Total Project		**61276**	
	%of FDI total Project			**37.7**

Sources: Directorate of Investment and Company Administration(DICA) in Myanmar

Although logistics infrastructure is an important factor for investment, Myanmar's current logistic infrastructure is poorer than other countries. The government is building physical roads to becoming Asia's "crossroads" through investments. Recently, the Oxford

Business Group issued of The Report: Myanmar 2018, which states that Myanmar is expected to require at least US$60 billion of new investment over the next 15 to 20 years to fulfill the country's rapid urbanization and massive infrastructure agenda set by the Ministry of Transport and Communication in September 2017. The government's emphasis on establishing effective national and international supply chains for future economic growth, improvements in infrastructure (particularly power infrastructure, road, rail, air, and ports) have the highest priority in order to attract FDI. Limited infrastructure capacity is also a major issue hindering the promotion of industrial activities. Table 2.3 shows a list of infrastructure enterprises and their existing value of investment as approved by the Foreign Investment Law.

FDI in hydroelectric power plants is permitted as a joint venture or build-operate-transfer (BOT) scheme. The Ministry of Construction seeks to encourage private sector investment in infrastructure development and uses BOT projects or joint ventures for the constructions of roads, inland cargo depots, ports, and airports. The government is conducting various infrastructural projects under BOT or other Public Private Partnerships (PPP) agreements with investors from the private sector.

2.4.6. Tax Exemption

Tax exemption is an influential factor for attracting FDI to a host country. From the spillover effects of the introduction of new technologies and the enhancement of human capital (skills), FDI can positively affect domestic income and policymakers frequently re-examine their tax rules to ensure the attractiveness of FDI. Moreover, governments should

constantly check the competitiveness of their tax environment for FDI, but ensure that an appropriate share of domestic tax is collected from multinationals.

Some previous studies have found that FDI was becoming increasingly sensitive to taxation and the long-run impact of corporate tax reform is one uncertainty of how tax factors into FDI decisions, including what investors consider to be favorable tax rates. Similar to comparisons regarding location and market size, foreign investors normally compare tax burdens in different locations. It should be noted that a low tax burden alone cannot compensate for a largely weak or unattractive FDI environment. However, tax incentives can be a major factor in investment location decisions for some foreign investors, especially, export-oriented companies.

Employees of companies incorporated in Myanmar and established under the foreign investment law are treated as residents and their income is taxed at a rate of 25%. Commercial tax is payable on goods that are imported or produced in Myanmar as well as trading sales and services. Recently, as the next step to promote and invite FDI, the current government is preparing many incentive schemes and policies to attract multi-national enterprises with promulgation of a new foreign investment law established in October 2016. Under the new Foreign Investment Law, the government will give income tax exemptions in designated zones. Zone 1 is the least developed region and will have an exemption for seven years. Zone 2 is a moderately developed region and will have an exemption for five years. Zone 3 is an adequately developed region and will have an exemption for three years. The government may also allow more favorable exemptions and relief for locations where Myanmar citizen-owned businesses are operated or for other investor economic activities.

2.4.7. Trade Policy Issues

Appropriate trade policies are not only predictable, consistent and transparent, but lower the risks for investors, which is particularly important for foreign firms. Empirical researchers point out that if trade policies are unpredictable, FDI will be lower. Another problem is trade-related infrastructure shortages for exports. These trade facilitation challenges are compounded by broad investment climate weaknesses, especially those affecting small to medium size businesses and entrepreneurs, with difficulties in access to finance to support export-oriented activities and capacity challenges in trade promotion institutions.

The previous government enacted the New Export and Import Law of September 2012, aiming to align Myanmar's trade policy with international rules and regulations, as well as promoting trade facilitation. Concerning the trade facilitation measures, the Ministry of Commerce is responsible for monitoring export and import license applications. However, the institutional, infrastructure and capacity challenges mentioned earlier are key impediments to Myanmar benefitting from trade development schemes, such as the Generalized System of Preferences (GSP) benefits reissued by the EU in July 2013 and the US in 2016. Since 2012, many of the previous trade sanctions have been lifted. An important trade policy and export promotion strategy was launched in March 2015 called NEX 2015-19, which was created in cooperation with the World Trade Organization. It is a road map to supporting workable, diversified economic development through trade. In line with this policy, the government started a 12-point economic strategy in July 2016 and set its trade policy objectives.

2.5. Policy Implications

Recently, a new trend in FDI of shifting investments from the natural resource and energy sectors to the manufacturing sector has improved FDI growth, but Myanmar's FDI is still not on a level comparable to neighboring countries. Inward FDI stock in Myanmar is much lower than that of neighboring countries. Some authors point out that if Myanmar chooses the right national development strategy, enhances open trade and investment strategies and learns from economies with similar experiences, the country can catch up to its neighbors and partners in the region. Some economic experts point out that government promotions to attract FDI are irrespective of the realization of an investment boom in the country. Facilitating labor intensive manufacturing and the accompanying support service activities would further raise trade, investment and income-earning opportunities as well as attract further foreign investment critical to transforming Myanmar's economy. Likewise, the country' success in getting the benefits from foreign direct investment will allow infrastructure development and better institutions through trade and investment liberalization.

Although the government is supporting value-added activities, exports continue to be heavily concentrated in raw materials such as natural gas, gems and other minerals with much of the incoming investment going to these areas in recent years. However, the government transactions rules and regulations have some weakness. Domestic reforms are necessary to build international confidence in the growth of commercial and investment ties with Myanmar and to lift the country's trade and growth potential. Recent economic, political and social restructuring changes offer better reasons for investment since the party led by Daw Aung San Suu Kyi gained power in 2016. Effective public investment, policy-making and power sharing

æare fundamental to sustainable trade-oriented growth, the development of the capacities and welfare of Myanmar's people and the peace and political settlement necessary to sustain ggrowth in the long term.

CHAPTER III

"Does the Gravity Model of Trade explain Myanmar's Trade Structure? "

3.I. Introduction

There is an overwhelming consensus that participating in international trade can be a dynamic and genuine driving force for economic development. In developing countries, trade can be seen as the backbone of their economies and can expand markets from local to global. Growing bilateral trade raises income levels and benefits both countries financially. Moreover, trade between neighbouring countries is useful for economic growth and to fulfil people's needs at the same time. Furthermore, trade allows businesses in developing countries to access the technologies essential for improving their productivity and competitiveness. Today's world trade is wider and stronger than ever before. Historically, countries' exports have depended on their climate and natural resource endowment.

Myanmar is located on mainland Southeast Asia and situated on a dynamic crossroads linking Southeast Asia, Western China (Yunnan) and the Indian sub-continent. Its geographical location makes Myanmar a vast potential market and a sub-regional economic nodal link between regions. Most of the countries in the Association of Southeast Asian Nations (ASEAN) have made outstanding economic progress by adopting regional integration. Myanmar can try to strengthen its economy through ASEAN and utilizing its singular geographic position as a link between South and Southeast Asia, a position which favours taking on new opportunities. As ASEAN becomes one of the fastest-growing economies in the world, the integration between ASEAN member countries grows stronger, and it continues to out-perform the rest of the global economy. The gravity model of GDP and

total trade value in the ASEAN region can show the original trade condition of Myanmar at the regional level. Even though Myanmar has emphasized economic integration with ASEAN member countries by joining the ASEAN Free Trade Area (AFTA), it does not seem to have brought about trade diversity. Stronger ties with other ASEAN member countries may be needed. Thailand is still the primary trading partner for Myanmar, alongside China and India. The higher the degree of complementary trade, the larger the differences in factor endowment and trade flow increase. For a long time, the US and Western trade sanctions weakened the ability of the Myanmar economy to be competitive in the global market. One important fact is that Myanmar has always imported more than it exports. According to the 2013 Trade Policy Review, in 2012-2013 many export taxes were removed, and others were only levied on a few natural resource products – namely, gems, oil and gas, teak and other timber. The intent was not only to make Myanmar's exports more competitive on world markets, but also to reduce the tax component in export prices. The Myanmar government strived to promote trade by making major policy changes in the trade sector, and all exports, besides a few specific goods, became free from commercial tax (Myanmar Investment Guide, 2014).

Moreover, the establishment of the ASEAN Economic Community (AEC) in 2015 was a major high point in the regional economic incorporation agenda. To harmonize with the principles of transparency, simplicity, efficiency and consistency of integration with the ASEAN Single Window (ASW), Myanmar has been implementing its own National Single Window (NSW). In the future, Myanmar's trade potential may improve not only with ASEAN partners, but also globally, thereby enhancing Myanmar's role as a trading partner.

The objectives of the study are to understand Myanmar's trade potential and complementary trade in future. This can be done by testing its trade flows empirically and comparing them with twenty other trade partners during the period of 2003 to 2015 – thirteen years in all – and considering the following questions: Does the Gravity Model of Trade explain Myanmar's trade structure? How can Myanmar's trade pattern be solved using the trade conformity index (TCI)? What is the role of ASEAN in Myanmar's trade sector development?

When analysing this data three empirical equations were considered, using total trade value, export value and import value as explanatory variables to evaluate the model. The Hausman-Taylor test is one method for testing the random effect model. The fixed effect model (FEM) is also appropriate for this analysis.

Myanmar's trade structure and flow estimates can be analysed by applying the standard gravity model to panel data. There are four sections to consider: the theoretical framework and perspectives of some previous literature, a look at empirical methodology, a description of the data, and finally a discussion of empirical results, leading to this study's main findings and remarks.

3.2. Theoretical Framework and Previous Literature Perspectives

There is an overwhelming consensus that participating in international trade can be a dynamic and genuine driving force for economic development. In developing countries, trade can be seen as the backbone of their economies and can expand markets from local to global. Growing bilateral trade raises income levels and benefits both countries financially.

Moreover, trade between neighbouring countries is useful for economic growth and to fulfil people's needs at the same time. Furthermore, trade allows businesses in developing countries to access the technologies essential for improving their productivity and competitiveness. Today's world trade is wider and stronger than ever before. Historically, countries' exports have depended on their climate and natural resource endowment.

The use of the gravity model of international trade theory intends to explain the bilateral trade flows and patterns between two economies. It assumes two economies that influence each other directly related to their economic size (GDP) and inversely related to their distance. Outside of these primary variables, some anomalous trade between the two countries is either much higher or much lower than the gravity model predicts, and economists are searching for an explanation to this. In addition to a mutual understanding of the determining factors of trade between countries, there are also important points in trade policy formulation. Deardorff (1998), and Evenett and Keller (1998) found the Heckscher–Ohlin model perspective to be consistent with the gravity equations and pointed out that the standard gravity equation can be obtained from the Heckscher–Ohlin model with both perfect and imperfect product specializations.

Another one of the principal uses of gravity models is to help us to identify anomalies in trade, which are cultural affinities and trade agreements. Other relevant variables can be used as additional explanatory variables, such as population, per capita GDP, land area, and many dummy variables including common language, adjacency and economic integration. Although international trade theories attempt to explain a country's trade flow, an empirical analysis of focused models may generate different results. The gravity equation can provide

a useful multivariate approach for assessing the impacts of regional trade agreements on the level and direction of bilateral trade flows. The distance between partners is inversely related to the degree of bilateral trade. To test this hypothesis, researchers Nguyen (2009), Nuroglu and Dreca (2011), and Walsh (2008) use the Hausman test, while other researchers like Keying Keum(2008) use the Linder hypothesis. Nguyen (2009) employed the Hausman–Taylor estimation to panel data for thirty-nine countries from 1988–2002, and noted that trade flows increased proportionately with GDP, and also that the formation of AFTA resulted in significant trade increase among its members. Walsh (2008) mainly uses the gravity model's underlying variables tested with a Hausman–Taylor test, and also used a fixed effect model (FEM), random effect model (REM) and the Breusch–Pagan test to compare REM to Pooled Ordinary Least Squares (OLS). Keying Keum(2008) studied the trade and tourism flow in Korea using a panel data gravity model analysis incorporating the Linder hypothesis.

Nuroglu and Dreca (2011) analysed the total trade flow by applying a modified gravity model which also shows that the distance, GDP per capita, and GDP and population of trade partners are major determinants of total trade flows and imports. Hout & Kakinaka (2007) analysed trade structure and trade flow by focusing on the basic gravity model of GDP, per capita GDP, and distance, as well as a standard gravity model of trade conformity index, exchange rate volatility and the ASEAN dummy. Rahman and Ara (2010) analysed trade potential by using the dynamic gravity approach with other relevant bilateral trade factors like tariffs, trade agreements, language, trade facilitation, and non-tariff barriers.

Sohn (2001, 2005) identified trade patterns in Korea by assuming that a Heckscher–Ohlin model explains bilateral trade flows between countries. His findings prove that South Korea's

trade flows could follow a Heckscher–Ohlin model. Hout & Kakinaka (2007)'s findings show that the positive and significant coefficient on the TCI implies that a Heckscher–Ohlin approach could be useful in explaining trade patterns. Trade flows are significantly dependent on inter-industry trade, which comes from differences in factor endowment and monopolistic competition.

Arabi and Ibrahim (2012) analysed Sudan's trade patterns in light of the gravity model using the TCI. The result showed that Sudan and its Arab trade partners have a competitive trade structure through intra-industry trade. This means that Sudan can encourage more economic reforms to promote trade with Arab countries and other partners. The reason is that most of Sudan's exports to Arab countries are in the form of live and slaughtered animals, cotton, gum Arabic, and groundnuts.

Aung (2009) analysed the structure of Myanmar's exports and the implications for economic development, incorporating the gravity model of trade as one part of his analysis. The author divided his study into two parts. The first part of the study points out the regional integration and bilateral trade flow of ASEAN members plus China, India, Korea and Japan. The second analysis shows Myanmar's trade structure based on the core gravity model variables plus three dummy variables: neighbouring nations, domestic crisis, and regional financial crisis. The empirical results showed that Myanmar mainly trades with neighbouring countries, and that political unrest has a strong effect on Myanmar's trade structure.

Lwin (2009) points out that the trade patterns of Cambodia, Laos and Myanmar (CLM), which includes Myanmar, follow the gravity model. This analysis mainly intends to identify the determining factors of each country's bilateral trade flows and policy implication for

promoting trade. The result indicates that the GDP for each CLM nation is largely related to their partner countries' GDP as well as other stated variables. The CLM countries need to promote bilateral trade with their nearby partner countries. When analysing bilateral trade in Myanmar, one important dummy variable, sanction is used as an extra variable in the model to examine the impact of trade sanctions. Myanmar's actual trade volume is lower than its trade potential with many Asian trading partner countries.

Kubo (2014) applied the gravity model to Myanmar's non-natural resources export potential after the lifting of economic sanctions. This study is broken into two parts. First, it uses data from 10 ASEAN countries to analyse export potential by calculating counterfactual exports with gravity equation regression. Second is the analysis of the effect of economic sanctions on bilateral trade flows, using a dummy variable. His conclusion shows that Myanmar's actual export of non-resource goods during 2005-2010 was one-fifth of its potential, implying that exporting to neighbouring countries failed to compensate for export losses to Western sanctions.

Hout & Kakinaka's (2007) model was used in this study, but some explanatory variables are different due to the limited data available about Myanmar's economy. In this study, the main focus was on the standard gravity model as applied to Myanmar and its partner countries' real GDP, and the bilateral trade flow between them. However, unlike Hout & Kakinaka (2007), real GDP per capita was ignored, and TCI was calculated based on one year's import/export market share between Myanmar and its partner countries. Like Nguyen (2009), Nuroglu and Dreca (2011) and Walsh (2008), the Hausman-Taylor test was used. However, the precedent of Keying Keum (2010) was followed and the Linder hypothesis was

incorporated. However, some researchers neglect hypothesis testing in their gravity model of trade analysis.

3.3. Empirical Methodology

Many empirical studies and analyses of international trade have accepted that the gravity equation is linked to a number of models, including the Ricardian, the Heckscher–Ohlin, and the monopolistic competition models. It is at the heart of any model of trade (Kimura & Lee, 2006). The empirical methodology here is based on a panel data analysis of trade structure and trade flow in Myanmar using the gravity model, following Hout & Kakinaka (2007). Nguyen (2009) and Nguyen (2010) also followed this panel data analysis to estimate trade flow. There is a related data set consisting of the total trade flow among Myanmar and 20 of its trade partner countries. Export and import values act as dependent variables, while independent variables consist of Myanmar's GDP, its partner countries' GDP, Myanmar GDP times with partner country's GDP and the distance between Myanmar and its partner countries. These variables serve as an approximation for economic size and purchasing power of the two economies, and bilateral trade volume will rise when a country's GDP and per capita GDP increase. Moreover, the distance between Myanmar and its partner countries is taken as a proxy for the cost of trade, which reflects various trade resistance factors like market access barriers, transportation costs, and delivery time.

To analyse the peculiarities of Myanmar's trade patterns, three new variables are the ASEAN trade network, exchange rate volatility, and the trade complementarity index (TCI). TCI can measure the degree of complementary trade between two countries and reflect

different factor endowments, which is in line with the Heckscher-Olin model. In previous studies about Myanmar's trade structure, TCI was not used as a single variable. Concerning exchange rate volatility, every economy is still influenced by the exchange rate between local currency and the US dollar. VOL is an explanatory variable used to incorporate the impact of exchange rate volatility in this gravity equation, and I calculate the exchange rate volatility between the US dollar and the partner country's currency. From a theoretical point of view, exchange rate fluctuation between countries is an essential monitor for trade as it allows trade, discourages risk, and covers the risk of profit uncertainty related to international transactions. Since regional trade cooperation is important in determining Myanmar's trade flows, including ASEAN as a dummy variable sets a standard which will be set to unity if the country is a member of ASEAN, and zero otherwise.

The empirical gravity equation used combines the basic gravity model with the standard gravity model, plus three new variables. The standard gravity model could be analysed with these three conditions to clarify the result:

$$lnT_{ij} = \beta_0 + \beta_1 lnY_i + \beta_2 lnY_j + \beta_3 lnY_i Y_j + \beta_4 lnD_{ij} + \beta_5 ASEAN_{ij} + \beta_6 VOL_j + \beta_7 TCI_{ij} + \varepsilon_{it} \quad \text{——— (1)}$$

$$lnEx_{ij} = \beta_0 + \beta_1 lnY_i + \beta_2 lnY_j + \beta_3 lnY_i Y_j + \beta_4 lnD_{ij} + \beta_5 ASEAN_{ij} + \beta_6 VOL_j + \beta_7 TCI_{ij} + \varepsilon_{it} \quad \text{----------(2)}$$

$$lnIm_{ij} = \beta_0 + \beta_1 lnY_i + \beta_2 lnY_j + \beta_3 lnY_i Y_j + \beta_4 lnD_{ij} + \beta_5 ASEAN_{ij} + \beta_6 VOL_j + \beta_7 TCI_{ij} + \varepsilon_{it} \quad \text{----------(3)}$$

In these equations, T_{ijt}, Ex_{ij} and Im_{ij} denote total trade value, export value and import value between Myanmar and Country J. Y_i, and Y_j indicate the GDP of Myanmar and Country

J, respectively. D_{ij} refers to the distance between Myanmar and Country J. $ASEAN_{ij}$ is a dummy variable; it will be set to unity if Country J belongs to ASEAN, and zero otherwise. VOL_j indicates the volatility of the nominal exchange rate between the US dollar and Country J's currency. TCI_{ij} is the trade conformity index, or measure of trade complementarities between bilateral trade. $\varepsilon_i t$ is an error term, while β_1, β_2, β_3, β_4, β_5, β_6, and β_7 are coefficients.

With reliable empirical methodology, a random effects model is appropriate, though many researchers only use two methods for estimating unobserved effects from panel data models. Even though these methods are somewhat harder to describe and implement, several econometric packages support them. The fixed effects estimator uses a transformation to remove the unobserved effect a_i before estimation. The random effects estimator is attractive when the unobserved effect is uncorrelated with all the explanatory variables. (Wooldridge, 2013, p. 466). In usual pooled OLS, standard errors ignore this correlation. The random effect transformation subtracts a fraction of the time average, but a fixed effects estimator subtracts the time average of the corresponding variable. One advantage of random effect is that all explanatory variables are constant over time because the unobserved effect is uncorrelated with all explanatory variables (Wooldridge, 2013). In many applications, the primary reason for using panel data is to allow the unobserved effect to correlate with the explanatory variables.

The Hausman–Taylor test supports empirical methodology. Hausman (1978) first proposed such a test, and some econometrics packages routinely apply the Hausman test under the full set of random effect assumptions. The idea is that one uses the random effects estimates unless the Hausman test eliminates them (Wooldridge, 2013, p. 478). I use the

Hausman test to examine whether the specification of the REM is correct or not. When analyzing this model practically, it should be noted that it contains both time-variant variables like GDP, exchange rate, and the ASEAN dummy, as well as time-invariant variables, such as distance.

3.4. Data Description

The pooled OLS estimation uses panel data to test the empirical gravity equation and covers a period from 2003 to 2015, totaling 13 years. It investigates Myanmar's trade structure and trade flow by comparing the 20 trading partner countries, including 10 Asian countries and 10 Western countries. Data related to Myanmar was gathered from international organizations such as the International Monetary Fund (IMF), which issued data called International Financial Statistics (IFS) and Direction of Trade Statistics (DOTS) in the IMF World Economic Outlook Database (2016). Other data sources were the International Trade Statistics of International Trade Center (UNCTAD), the World Trade Organization (WTO), the International Trade Centre of Trade Statistics for International Business Development (Trade Map), and distances were found from the World Clock – Worldwide (https://www.timeanddate.com/worldclock/).

All data is shown in US dollars and GDP is adjusted by the US GDP deflator as a real term, with distance measured in kilometers (km). Trade data is computed as total trade value, with export value and import value shown separately in this analysis. The main source of this information is DOTS. The distance between countries measured is from Myanmar's capital city, Naypyidaw, to each partner country's capital city. Times are taken from the World Clock

– Worldwide website. Exchange rate volatility is calculated from the partner countries' exchange rate volatility by computing the standard deviation for each country. It is not difficult to get exchange rates from the IMF, and all rates are identical for the members of European Union as they all use the same currency, the euro.

3.4.1. The ASEAN Dummy

As Myanmar is member of ASEAN, the ASEAN dummy variable is used in this study as a measure of unity if the partner country is also an ASEAN member, and otherwise it is considered to be zero. Using an ASEAN dummy is one key point for this analysis as ASEAN is a critical regional organization for ASEAN member countries. In Myanmar's current trade position, import is a more favorable point than export. The customs duties levied on the import of machinery, spare parts, and other inputs range from nil to 40 percent of the imported goods' value (Asia Tax Guide, 2013).

3.4.2. Trade Conformity Index

The TCI measures the degree of trade complementarity or competitiveness between two countries. The TCI is calculated using a three-digit number assigned under the Standard International Trade Classification (SITC). It represents the commodities that are produced by a nation with similar factors and technology. Following the ways of Sohn (2005) and Hout & Kakinaka (2007), the TCI measures the degree of trade complementarity between two countries and reflects factor endowment differences. The higher the degree of trade complementarity, the larger the differences in factor endowment and trade flow increase, as checked against the Heckscher–Ohlin model. The TCI between country i and country j is

calculated in the following form:

$$TCI_{ij} = \sum_{k=1}^{n} X_{ki}\ M_{kj}\ \left[\sum_{k=1}^{n} X_{ki}^{2}\ \sum_{k=1}^{n} M_{kj}^{2}\right]^{\frac{-1}{2}} \text{----------(4)}$$

where TCI equals trade conformity index, i and j refer to a country and its potential trade partner, and k means a commodity group. X_{ki} is the share of commodity group k in the exports of country i, M_{kj} is the commodity group k's share in the imports of the country j. Xki is the share of commodity group k in Myanmar's export to her partner countries, and Mkj is the share of product k in the partner country's import from Myanmar. If the empirical result is captured by the measure of trade structure, it will be consistent with the Heckscher–Ohlin model of factor endowment difference between countries with inter-industry trade.

The TCI ranged from zero to one. The TCI is one means in which Myanmar's export share is related to its partner countries' import share, and Myanmar has an equal trade share against its partner countries. Where TCI equals zero, Myanmar's export share is smaller than its partner country's import share, and Myanmar does not have a perfectly fair-trade share against its partner country. The TCI is calculated based on a trade map of export and import shares of Myanmar and its partner countries. Myanmar and its partner countries' bilateral trade in 2015 is a uniform commodity group of 85 electrical and electronic equipment products gathered from International Trade Centre of Trade Statistics for International Business Development (Trade Map).

However, the trade indicators to calculate various useful trade indices with the underlying UN Comtrade data show the TCI can support relevant information on predictions for intraregional trade. One benefit of this is that the values for states considering the formation

of a regional trade agreement can be compared with others that have formed or tried to create similar arrangements. The World Bank calculates the TC trade indicator with this equation:

$$TC_{ij} = 100(1 - sum\ (|m_{ik} - x_{ij}| / 2)) \text{ ----------(5)}$$

Here, x_{ij} is the share of good i in global exports of country j and m_{ik} is the country k's share of good i in all imports (Trade Indicator-World Bank). The index is zero if one country exports no product that is imported by the other, and if the export and import shares are both exactly 100.

Table 3.1 Data description

Variables	Unit	N	Mean	Max	Min	Std. Dev.
Total Trade Value	USD (mil)	260	869.22	24474.32	0.19	2291.68
Export Value	USD (mil)	260	340.77	14161.96	0.00	1103.20
Import Value	USD (mil)	260	528.47	10325.56	0.03	1322.94
Myanmar Real GDP	USD (bil)	260	38.46	61.00	14.00	18.74
Partner Countries' Real GDP	USD (bil)	260	2257.52	16349.00	97.00	3336.17
Myanmar and Partner Countries Real GDPs	USD (bil)	260	91570.44	997610.00	1345.00	158570
Distance	km	260	5804.73	13472.00	815.00	3629.63
ASEAN Dummy		260	0.25	1.00	0.00	0.43
Trade Conformity Index	%	260	0.18	0.92	0.00	0.30
Exchange Rate Volatility	US $	260	0.0380	0.1225	0.00	0.0294

Sources: International Monetary Fund: Direction of Trade Statistics, World Economic Outlook Database, International Trade Statistics of International Trade Center, World Clock-Worldwide.

Sohn (2005) explains that the estimate of the coefficient becomes positive when trade volume increases with the rising trade complementarities; this is precisely what is represented by the Heckscher–Ohlin trade model of inter-industry trade. On the other hand, the coefficient becomes negative when the trade volume increases with the falling trade complementarities.

This could occur where trade volume increases with increasing competitive trade structure and represents the differentiated product model of intra-industry trade. International trade allows for the creation of an integrated market that is larger than any one country's market. Thus, it is possible to simultaneously offer consumers a greater variety of products and lower prices. The type of trade generated by this model is an intra-industry trade (Krugman, Obstfeld, & Melitz, 2012, p. 178). Regarding 'inter-industry' and 'intra-industry,' there is an important difference. In theory, the trade of products that belong to different industries is called inter-industry trade. By contrast, scholars define intra-industry trade as the trading of similar products that belong to the same industry. This has been a key factor in trade growth in recent decades.

3.5. Empirical Results, Discussion, and Hypothesis Testing

This study solves a gravity equation that combines the basic gravity model with the standard gravity model. Panel data analysis allows more variability and reduces the multicollinearity between variables and some time-invariant factors characterized by trading partners affecting Myanmar's trade structure and trade flow. If this point is ignored, regressions may occur from an omitted variable problem. As a consequence, the inconsistent and biased coefficients can be overcome by controlling for unobserved individual effects in

the random effects model (REM). As model evaluation data analysis, three empirical equations are used to prove the model's accuracy: total trade, export value, and import value. This study uses the three types of estimation concerning GDP. One uses only Myanmar's GDP and the partner country's GDP with other variables; a second one is Myanmar's GDP times to partner country's GDP and other variables; the last one is a full model which combines both types and all other variables in the analysis. OLS estimation and random effect estimation are shown separately. The Hausman test can examine whether the REM or FEM specification is appropriate. The estimated results are shown in Table 3.2 to Table 3.11, respectively. Standard errors are fully robust standard errors in all test results.

Table 3.2 shows the OLS estimation result for three explanatory variables: total trade value, export value, and import value. It does not include the Myanmar's GDP times to partner country' GD to clarify Myanmar's trade structure with the gravity model. All results from the explanatory variables are similar, except where the coefficient of Myanmar's GDP is negative and therefore insignificant when using export as a dependent variable. When considered with standard gravity, Myanmar's trade structure also matches previous studies.

Other explanatory variables, such as the ASEAN dummy, partner countries' exchange rate volatility, and the TCI, do not differ like they did in the previous estimation, and they stand as statistically insignificant. However, the ASEAN dummy has a slightly negative relationship with the export value of Myanmar. If the partner countries' exchange rate is unstable, it will impact Myanmar's trade improvement. However, there is not a strong relationship between Myanmar and partner countries' exchange rate in this model.

Table 3.2 Standard Gravity Model (OLS Pool Estimation) Type I Estimation (without RyiRyj)

Dependent variables: total trade value, export value and import value

	Total Trade Ln (Tot)	**Export Ln (Ex)**	**Import Ln (Im)**
Constant	20.36***	21.69***	18.84***
	(8.6)	(9.65)	(5.04)
Ln Ry_i	0.36***	-0.07	0.82***
	(2.51)	(-0.36)	(6.28)
Ln Ry_j	1.1***	1.2***	1.14***
	(5.99)	(6.4)	(6.29)
Ln Distance	-2.9 ***	-3.06***	-3.03***
	(-11.3)	(-16.62)	(-6.52)
ASEAN Dummy	0.25	-0.39	0.62
	(0.44)	(-0.78)	(0.87)
TCI	-0.27	-0.36	-0.18
	(-0.59)	(-1.02)	(-0.26)
E.R. Volatility	3.32	1.01	0.46
	(0.49)	(0.10)	(0.07)
F-Statistics	129.16***	76.28***	124.52***
Adjusted R-Squared	0.75	0.64	0.74
No. of Observations	260	253	260

Note: *, **, and *** denote statistical significance within 10%, 5%, and 1% respectively. Numbers in parentheses are t-statistics.

Table 3.3 Standard Gravity Model (Random Effect) Type I Estimation

(without Ryi Ryj) Dependent variables: total trade value, export value and import value

	Total Trade Ln (Tot)	**Export Ln (Ex)**	**Import Ln (Im)**
Constant	20.53***	22.19***	19.9***
	(8.73)	(9.39)	(4.49)
Ln Ry_i	0.38**	-0.08	1.01***
	(2.47)	(-0.42)	(7.66)
Ln Ry_j	1.05***	1.31***	0.53***
	(5.7)	(6.78)	(3.12)
Ln Distance	-2.88***	-3.22***	-2.7***
	(-11.23)	(-14.14)	(-5.93)
ASEAN Dummy	0.17	-0.31	-0.14
	(0.29)	(-0.66)	(-0.15)
TCI	-0.30	-0.42	-0.12
	(-1.05)	(-1.51)	(-0.37)
E.R. Volatility	3.06	2.8	-1.62
	(0.46)	(0.28)	(-0.21)
F-Statistics	29.2***	18.34***	50.96***
Adjusted R-Squared	0.40	0.29	0.54
No. of Observations	260	253	260

Note: *, **, and *** denote statistical significance within 10%, 5%, and 1% respectively. Numbers in parentheses are t-statistics.

The TCI shows a negative coefficient value which is insignificant in all three variables. If this index is statistically significant, trade volume increases with increasingly competitive trade structure and represents a differentiated product model within intra-industry trade. To be precise, Myanmar is still dependent on its natural resources. Adjusted R-squared and F-statistics show the model's fitness to be used for data analysis. Table 3.3 shows random effect results, and its outcome is nearly the same as Table 3.2, albeit smaller than the adjusted R-squared. However, F-statistics show statistical significance within one percent.

Table 3.4 Standard Gravity Model (OLS Pool Estimation) Type II Estimation

(without Ryi, Ryj) Dependent variables: total trade value, export value and import value

	Total Trade Ln (Tot)	**Export Ln (Ex)**	**Import Ln (Im)**
Constant	19.02***	19.91***	18.29***
	(6.58)	(5.76)	(4.84)
Ln Ry_i Yj	0.85***	0.75***	1.03***
	(7.88)	(5.16)	(9.75)
Ln Distance	-2.73***	-2.81***	-2.96***
	(-9.86)	(-10.32)	(-6.57)
ASEAN Dummy	-0.02	-0.9	0.50
	(-0.04)	(-1.46)	(0.68)
TCI	-0.11	-0.04	-0.11
	(-0.25)	(-0.96)	(-0.16)
E.R. Volatility	2.82	1.38	0.25
	(0.4)	(0.13)	(0.04)
F-Statistics	136.02***	70.78***	146.95***
Adjusted R-Squared	0.72	0.58	0.74
No. of Observations	260	253	260

Note: *, **, and *** denote statistical significance within 10%, 5%, and 1% respectively. Numbers in parentheses are t-statistics.

These tables (Table 3.4 and 3.5) show the OLS estimation result and random effect result of the coefficient of Myanmar's GDP times with the partner country's GDP for the three explained variables without including separate form variables. The results show that the coefficient of Myanmar's GDP times to the partner country's GDP positively affects Myanmar's trade flow, export values, and import values. These numbers are statistically significant within one percent. This outcome, which is supported by previous studies, serves as robust evidence that the GDP can visibly explain Myanmar's trade structure with standard gravity. Distance follows the previous researcher's outcome.

The ASEAN dummy, partner countries' exchange rate volatility, and TCI are not statistically significant in all equations. However, the ASEAN dummy is negatively related to total trade and export value, but positively related to import value. This means that the development of Myanmar's export sector is not wholly dependent on ASEAN, while ASEAN has an insignificant impact on import. The coefficient of TCI values is negative for total value, export value, and import value, but not significant in any case. Partner countries' exchange rate volatility has a significant and negative impact on Myanmar's total trade and import, reaching five percent when import is a dependent variable. The lesser the exchange volatility of partner countries, the larger the total trade and import values. As with the random effect model, adjusted R-squared and F-statistics can actively show the usefulness of the model.

The explanatory results of Table 3.5 are nearly the same as Table 3.4, but with a negative ASEAN dummy, the random effect test shows a statistical significance within 10%. The effect of the exchange rate volatility of partner countries on import is negative, but not significant.

Table 3.5 Standard Gravity Model (Random Effect) Type II Estimation

(without Ryi, Ryj) Dependent variables: total trade value, export value and import value

	Total Trade Ln (Tot)	**Export Ln (Ex)**	**Import Ln (Im)**
Constant	20.9***	22.36***	19.52***
	(6.32)	(5.53)	(5.32)
Ln Ry_iyj	0.58***	0.43***	0.86***
	(6.89)	(2.77)	(13.83)
Ln Distance	-2.61***	-2.7***	-2.88***
	(-7.29)	(-6.32)	(-6.82)
ASEAN Dummy	-0.38	-1.33*	0.27
	(-0.53)	(-1.87)	(0.34)
TCI	-0.17	-0.02	-0.16
	(-0.53)	(-0.04)	(-0.51)
E.R. Volatility	1.69	1.23	-0.51
	(0.22)	(0.11)	(-0.08)
F-Statistics	32.4***	14.45***	59.92***
Adjusted R-Squared	0.38	0.21	0.53
No. of Observations	260	253	260

Note: *, **, and *** denote statistical significance within 10%, 5%, and 1% respectively. Numbers in parentheses are t-statistics.

When discussing OLS regression results, explanatory variables are Myanmar's GDP, partner countries' GDPs, Myanmar's GDP times to partner countries, distance, the ASEAN dummy, the TCI, and partner countries' exchange rate volatility, shown in US dollars. Table 3.6 shows the result of the OLS regression of standard gravity for the three explained variables; total value, export value, and import value.

Table 3.6 Standard Gravity Model (OLS Pool Estimation) Type III Estimation (Combination)

Dependent variables: total trade value, export value and import value

	Total Trade Ln (Tot)	**Export Ln (Ex)**	**Import Ln (Im)**
Constant	20.14***	21.8***	19.44***
	(8.55)	(9.27)	(4.32)
Ln Ry_i	10.01***	10.18***	12.85***
	(4.04)	(2.84)	(3.39)
Ln Ry_j	10.59***	11.5***	12.24***
	(4.24)	(3.16)	(3.41)
Ln Ry_iy_j	-9.55***	-10.19***	-11.74***
	(-3.84)	(-2.81)	(-3.21)
Ln Distance	-2.87***	-3.22***	-2.68***
	(-11.11)	(-13.95)	(-5.78)
ASEAN Dummy	0.17	-0.3	-0.16
	(0.29)	(-0.63)	(-0.16)
TCI	-0.27	-0.42	-0.08
	(-0.96)	(-0.8)	(-0.25)
E.R. Volatility	3.1	2.85	-1.62
	(0.46)	(0.53)	(-0.2)
F-Statistics	25.01***	15.27***	44.36***
Adjusted R-Squared	0.39	0.28	0.54
No. of Observations	260	253	260

Note: *, **, and *** denote statistical significance within 10%, 5%, and 1% respectively. Numbers in parentheses are t-statistics.

The coefficient of Myanmar and its partner country's GDP is positively affected by Myanmar's trade flow, export values, and import values. This means that as the GDP of Myanmar and its partner countries increases, the total trade, export, and import values will also increase. It is statistically significant within one percent. Likewise, Myanmar's GDP times the partner country's GDP is negatively affected by Myanmar's trade structure, and this is also statistically significant. This outcome serves as substantial evidence to explain Myanmar's trade structure with standard gravity, and it is well-supported by previous studies.

The results show that the distance is inversely related and statistically significant within one percent in all three types of rational equations. The larger the distance between the countries, the lesser the trade value between those two countries, a finding which harmonizes with the previous gravity model concept of trade.

As a member of ASEAN, ASEAN has a relationship with Myanmar for exports and imports. Some ASEAN countries, especially Thailand and Singapore, trade more with Myanmar than others. The ASEAN dummy has a positive effect relative to export, import, and total trade structure, but that effect is statistically insignificant. The problem with this analysis is that only five members of ASEAN are included rather than the whole organization. Therefore, the ASEAN dummy cannot thoroughly explain Myanmar's total trade flow, even though Myanmar is part of ASEAN and an active participant in AFTA, and Thailand and Singapore are among Myanmar's top five trading partners in this region.

Another explanatory variable, partner countries' exchange rate volatility, is directly affected by all three dependent variables, but it stands as statistically insignificant. The exchange rate volatility variable in this model measures the effect of Myanmar's partner countries' exchange rate volatility on imports of US dollars versus the local currency. If the partner countries' exchange rates are stable, their trade relationship with Myanmar will improve. The exchange volatility of partner countries is based solely on those countries' exchange rates with the US dollar only. Although exchange rate volatility is one critical point for trade between countries, there is not a strong relationship between Myanmar and its partner countries' exchange rates in this model.

The trade conformity index (TCI) is a core variable for this analysis. The TCI shows Myanmar's inter-industry trade following the Heckscher–Ohlin model of comparative advantages of factor endowment differences between nations. It has a negative coefficient value,but is insignificant in all three variables. Sohn (2005) showed that if the estimate of the coefficient is positive and greater than zero, trade volume increases with the rising trade complementarities. On the other hand, the coefficient becomes negative when the trade volume increases with the falling trade complementarities. This could occur where trade volume increases with increasing competitive trade structure and represents the differentiated product model of intra-industry trade. Intra-industry trade plays an even more prominent role in the trade of manufactured goods among advanced industrial nations, which accounts for much global trade. The proportion of intra-industry trade among global trade has steadily grown over the last half century (Krugman, Obstfeld, and Melitz, 2012, p. 169). Adjusted R-squared and F-statistics show that this model is acceptable for data analysis.

Table 3.7 shows the result of the random effects model of standard gravity with the three explained variables (total trade, export value, and import value) concerning Myanmar's trade with its partner countries. The empirical results show that both the distance between Myanmar and its partner countries and also their respective GDPs are statistically significant within one percent in all three types of rational equations, a finding which matches the gravity model concept of trade. Table 3.7 shows results similar to the OLS method in Table 3.6.

Table 3.7 Standard Gravity Model (Random Effect) Type III Estimation (Combination)

Dependent variables: total trade value, export value and import value

	Total Trade Ln (Tot)	Export Ln (Ex)	Import Ln (Im)
Constant	19.99***	21.28***	18.42***
	(8.5)	(9.63)	(4.94)
Ln Ry_i	10.85***	11.48***	12.73***
	(3.75)	(3.11)	(2.98)
Ln Ry_j	11.50***	12.66***	12.94***
	(3.94)	(3.41)	(3.11)
Ln Ry_iy_j	-10.40***	-11.46***	-11.81***
	(-3.57)	(-3.08)	(-2.83)
Ln Distance	-2.89***	-3.06***	-3.03***
	(-18.10)	(-16.62)	(-.6.5)
ASEAN Dummy	0.25	-0.39	0.62
	(0.44)	(-0.77)	(0.87)
TCI	-0.27	-0.36	-0.18
	(-0.58)	(-1.32)	(-0.25)
E.R. Volatility	3.32	0.99	0.46
	(0.48)	(0.10)	(0.07)
F-Statistics	110.99***	65.48***	106.99***
Adjusted R-Squared	0.75	64	0.74
No. of Observations	260	253	260

Note: *, **, and *** denote statistical significance within 10%, 5%, and 1% respectively. Numbers in parentheses are t-statistics.

The OLS regression results of the standard gravity equation as the dependent variable of total trade value leaving with one new variable (ASEAN dummy, exchange rate volatility, and TCI). Each estimation results in a similar outcome, and the original gravity variables are significant within one percent and can therefore confirm the trade structure. However, there is no provable result from the new gravity model, even though one variable was left from the estimation like the full standard gravity model. Myanmar's GDP times to partner countries'

GDP is negatively related to Myanmar's total value, and it's statistically significant within one percent. (see Table 3.8)

Table 3.8 Standard Gravity Model (OLS Pool Estimation)

Dependent variable: total trade value

	Without TCI	Without Exchange Rate Volatility	Without ASEAN Dummy
Constant	19.27***	20.56***	20.94***
	(8.09)	(8.53)	(9.44)
Ln Ryi	10.9***	10.88***	10.88***
	(3.73)	(3.84)	(3.67)
Ln Ry_j	11.54***	11.52***	11.49***
	(3.93)	(4.02)	(3.89)
Ln $Ryiy_j$	-10.45***	-10.43***	-10.42***
	(-3.56)	(-3.66)	(-3.51)
Ln Distance	-2.82***	-2.94***	-2.98***
	(-10.86)	(-11.34)	(-13.25)
ASEAN Dummy	0.33	0.17	-
	(0.53)	(0.26)	
TCI	-	-0.38	-0.36
		(-0.86)	(-0.62)
E.R. Volatility	3.98	--	2.73
	(0.62)		(0.38)
F-Statistics	129.3***	128.59***	129.24***
Adjusted R-Squared	0.75	0.75	0.75
No. of Observations	260	260	260

Note: *, **, and *** denote statistical significance within 10%, 5%, and 1% respectively. Numbers in parentheses are t-statistics.

Table 3.9 Standard Gravity Model (OLS Pool Estimation)

Dependent variable: export value

	Without TCI	Without Exchange Rate Volatility	Without ASEAN Dummy
Constant	20.35***	21.43***	19.79***
	(7.31)	(9.02)	(10.12)
Ln Ryi	11.52***	11.5***	11.49***
	(3.14)	(3.18)	(3.16)
Ln Ry_j	12.67***	12.68***	12.74***
	(3.44)	(3.49)	(3.47)
Ln $Ryiy_j$	-11.48***	-11.48***	-11.49***
	(-3.1)	(-3.14)	(-3.12)
Ln Distance	-2.95***	-3.07***	-2.93***
	(-11.77)	(-15.89)	(-14.71)
ASEAN Dummy	-0.29	-0.41	-
	(-0.5)	(-0.74)	
TCI	-	-0.39	-0.22
		(-1.04)	(-0.51)
E.R. Volatility	1.94	-	1.76
	(0.21)		(0.18)
F-Statistics	76.17***	76.65***	75.91***
Adjusted R-Squared	0.64	0.64	0.69
No. of Observations	253	253	253

Note: *, **, and *** denote statistical significance within 10%, 5%, and 1% respectively. Numbers in parentheses are t-statistics.

The OLS regression results of the standard gravity equation as the dependent variable of export value and import value leaving with one new variable (ASEAN dummy, exchange rate volatility, and TCI). Each estimation results in a similar outcome, and the original gravity variables are significant within one percent and can therefore confirm the trade structure. Myanmar's GDP times to partner countries' GDP is negatively related to Myanmar's total trade value, and it's statistically significant within one percent. (see Table 3.9)

Table 3.10 Standard Gravity model (OLS pool estimation)

Dependent variable: import value

	Without TCI	Without Exchange Rate Volatility	Without ASEAN Dummy
Constant	17.95***	18.50***	20.8***
	(6.00)	(5.12)	(6.5)
Ln Ry_i	12.77 ***	12.74***	12.8***
	(2.99)	(2.99)	(2.92)
Ln Ry_j	12.97***	12.95***	12.92***
	(3.11)	(1.13)	(3.04)
Ln $Ryiy_j$	-11.84***	-11.81***	-11.86***
	(-2.84)	(-2.84)	(-2.77)
Ln Distance	-2.97***	-3.03***	-3.23***
	(-7.34)	(-6.55)	(-7.99)
ASEAN Dummy	0.67	0.61	--
	(0.97)	(0.8)	
TCI	--	-0.19	-0.42
		(-0.30)	(-0.53)
E.R. Volatility	0.9	--	-1.02
	(0.15)		(-0.15)
F-Statistics	125.1***	125.3***	121.8***
Adjusted R-squared	0.74	0.74	0.74
No. of Observations	260	260	260

Note: *, **, and *** denote statistical significance within 10%, 5%, and 1% respectively. Numbers in parentheses are t-statistics.

When analyzing Myanmar's trade structure, import has more influence than export, and the import value is larger than export during this period. US and Western sanctions greatly affected Myanmar's economy and trade sector. If we ignore the TCI and exchange rate volatility, ASEAN is a strong influencing factor on Myanmar's trade sector improvement. The ASEAN dummy is negatively related to export value and positively to import value, but not significant in either case. If we do not include the TCI and ASEAN dummy, exchange rate volatility is positively related to import value but negatively to export value. However, the

TCI leads to the same outcome in both two estimations without including the other two variables in the model (see Table 3.10)

Table 3.11 Hausman Test Result

Appropriateness of Fixed Effect Model (FEM) or Random Effect Model (REM)

	Equations 1	**Equations 2**	**Equations 3**
Total Trade Value	REM	REM	FEM
Export Value	REM	REM	FEM
Import Value	REM	REM	REM

Sources: own calculations

The Hausman test is the best statistical test to decide whether the fixed or random effect model is appropriate for all empirical models of gravity analysis. Walsh (2008) first used the Hausman-Taylor model to estimate the gravity equation for services trade. He found the random effects model is a superior model for his empirical analysis, proved that it suffers from heterogeneity bias in the gravity model, and avoided the problems associated with trying to account for time-invariant variables using a fixed-effects model. The null hypothesis is that the random effect model is an appropriate and alternative hypothesis that the fixed effect model is appropriate. If chi-square statistics are not significant, it cannot reject Ho and accept H_1. In previous studies, it was found that the random effect model is appropriate when comparing them. Due to time-invariant variables, the fixed effect model is inappropriate for analysis. All testing from Type I and Type II indicates that the random effect model is appropriate, but Type III estimation of dependent variables shows that the fixed effect model is appropriate. Therefore, we can conclude that the random effect model is appropriate for analyzing Myanmar's trade structure and flow with the standard gravity model.

3.6. Conclusion and Finding

This analysis points out concerns with Myanmar's trade structure, but indicates that the trade flow will continue to flourish in the future. Based on this study's empirical result, the gravity model can explain Myanmar's trade structure and flow completely with the outcomes in the model. Like Sohn (2005), Hout & Kakinaka (2007), and Arabi, K. & Ibrahim (2012), the positive and significant coefficient of the TCI implies that a Heckscher–Ohlin presumption could be appropriate in explaining trade patterns. Trade flows are significantly dependent on the inter-industry trade that comes from factor endowment difference, and the intra-industry trade that comes from monopolistic competition. Thus, the trade with developed countries results in a TCI that reflects large endowment differences, hence inter-industry trade. As Myanmar's economy is mainly based on natural resource exports, that means that Myanmar needs to promote trade competitiveness on the world market.

Though endowed with many natural resources and human resources, Myanmar is experiencing a lag in economic development compared to other Southeast Asian countries. Myanmar could not utilize her resources efficiently for an extended period. Foreign exchange rate instability has had serious effects on trade sector development and the nation's trade value. It hinders foreign direct investment and dampens the enthusiasm of potential investors. In the past, bilateral trade between Myanmar and Western countries was quite weak, although neighboring countries are the most important trade partners for Myanmar. For a long time, the United States of America's sanctions on Myanmar affected the economy and likely prevented trade sector development and trade flow. Since the democratic government took power and converted the administrative system, Myanmar has had a chance to create new economic

opportunities and promote openness in the trade sector. Exports are crucial for economic development, and export production tends to be more labor-intensive and creates new jobs for the domestic market. Tariff protection in Myanmar is relatively light as it is still a developing country, even compared to other ASEAN countries. With a few exceptions, most imported goods are subject to duties and must be declared to the Myanmar Customs Department accordingly.

Currently, the new government is striving to promote Myanmar's economy by reviewing and enacting foreign economic policy to improve trade sector and economic development. With the exception of Thailand, ASEAN countries trade far less with Myanmar than they do with their other neighbors. Previous researchers didn't use the trade conformity index (TCI) when analyzing Myanmar's trade structure. The ASEAN dummy shows that Myanmar still needs to tie itself closer to ASEAN for trade improvement. Partner counties' exchange rate volatility has a positive effect on total trade and exports,but does not affect imports. One of the weaknesses of this analysis is the absence of a comparison between Myanmar and its partner country's exchange rate volatility. The TCI generates trade volume increases with falling trade complementarities as well as with increasing competitive trade structure, and it represents the differentiated product model with intra-industry trade. Myanmar's level of trade performance is still lower than other ASEAN member countries and neighboring countries. FEM does not allow for estimating time-invariant variables. However, REM has the advantage of handling these kinds of explanatory variables and matches with this analysis and the Hausman test matches with this analysis. Although some results were shown as

statistically insignificant, the standard gravity model can completely explain the trade structure and flow of Myanmar.

CHAPTER IV

The Effects of Trade Openness and Exchange Rate Volatility on Foreign Direct Investment in Myanmar and ASEAN

4.1 Introduction

Developing countries were focused on export-oriented industries and foreign direct investment (FDI) emerged as the most important source of external resource inflow. International trade and FDI are leading factors that drive economic growth. When analyzing the main determinants of FDI, country-specific characteristics are widely accepted, especially factors related to the host country market. UNCTAD (1998) highlighted that the characteristics of host markets are major driving factors of FDI flows. Trade facilitation challenges allow broader investment climate weaknesses, especially those affecting small and medium-sized enterprises (SMEs) and entrepreneurs, difficulties accessing financing to support export-oriented activities, and capacity challenges in trade promotion institutions. An analysis of the long-term challenges of economically integrating the Association of South East Asian Nations (ASEAN) through trade and FDI indicated that trade flows and inward FDI mutually reinforce each other and that a larger market tends to attract more even more inward FDI) (Kawai & Naknoi, 2016).

Myanmar is rich in natural resources, has a young labor force and is in a strategic geographic location between the two economics giants of India and China. The government has initiated a broad range of reforms to open its economy to foreign trade and foreign investment in Myanmar. As one of the least developed countries in the region, capital

inadequacies highlight the difficulties in promoting large scale production and exports. Myanmar has various agricultural and forestry resources, marine resources in coastal areas and it is possible that a wide range of efficient agricultural, forest and fishery products needed in overseas consumer markets could be produced and exported. However, Myanmar faced some politically motivated economic sanctions and there were few foreign investors apart from neighboring and some Asian countries. Although imports had a strong effect on Myanmar's economy, export promotion stagnated, which in turn had a negative effect on FDI inflows into Myanmar.

Since 2011, trade and investment have expanded rapidly in Myanmar, bolstered by economic liberalization, legal reforms, a large untapped domestic market and a favorable geographic position sharing borders with Bangladesh, China, India, Laos and Thailand. Sufficient infrastructure development is an essential prerequisite to encourage industrial and agricultural growth and has the highest priority in order to attract FDI into Myanmar. As Myanmar is a labor abundant country, low labor cost is one essential point in attracting FDI for export-oriented labor-intensive sectors. Facilitating labor-intensive manufacturing and the associated supporting service activities would raise trade, investment and income-earning opportunities as well as attract additional foreign investment. The exchange rate and price stability (inflation) are other factors that determine investment into Myanmar.

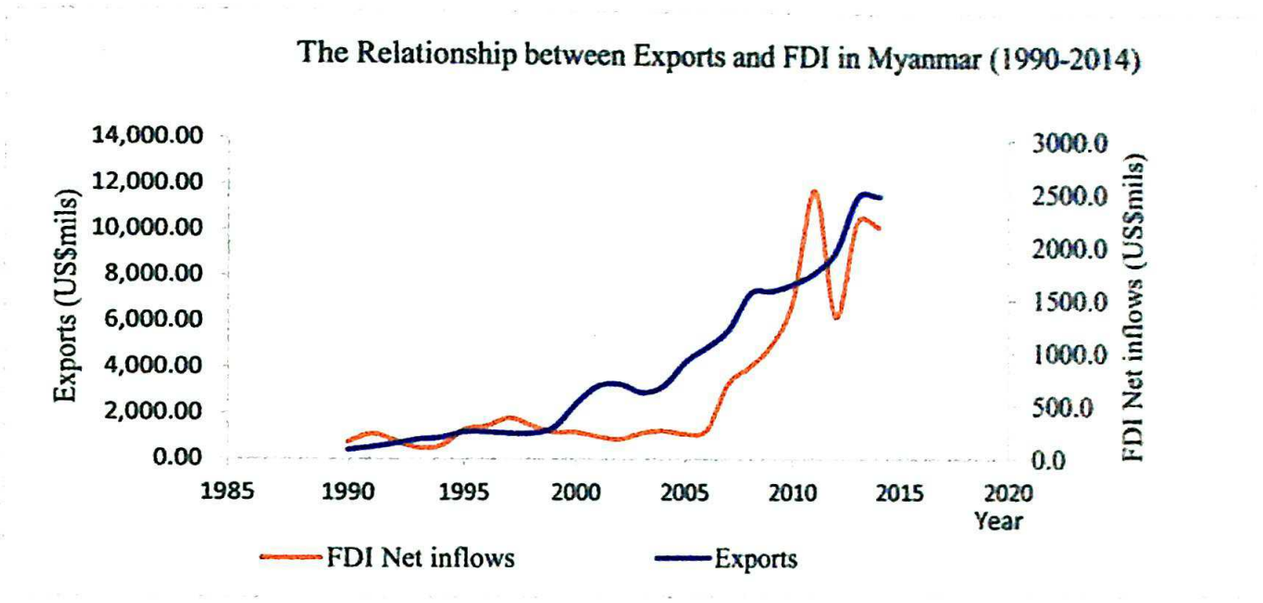
This paper analyzes the impact of trade openness, exchange rate volatility and other determinants of economic variables on FDI inflow focusing on Myanmar by using ordinary least squares (OLS) estimation. Furthermore, there is an analysis of eight ASEAN countries (excluding Brunei, Timor-Leste and Myanmar) using a panel data analysis of random effect

model estimation and the Hausman test to check whether a random effect model (REM) or a fixed effect model (FEM) is appropriate. The main research theme is how trade and key economic variables impact FDI inflow to Myanmar and ASEAN countries. This study contains five sections; exploring the perspective of previous literature, the theoretical foundation of FDI, research methodology and empirical models, data description and sources and finally the results with a discussion of policy implications and the conclusion of the study.

4.1.1 The Relationship between Exports and FDI Net Inflows into Myanmar

The relationship between trade and FDI varies with the motives and determinants of FDI. Myanmar's trade openness ratio has been falling over time, and the ratio of foreign trade as a proportion of GDP is one of the lowest among developing countries. After the military government took political power in 1988, there were many economic reforms, including trade sector improvement. From 1990 to 1999, FDI inflows and exports fluctuated with each other. From 2000 onward, exports increased higher than FDI inflows (Fig. 4.1). However, in 2010, exports and FDI inflows reached the same point. Since 2010, exports and FDI inflows are nearly parallel.

Figure 4.1 The Relationship between Exports and FDI Net Inflows into Myanmar (1990-2017)

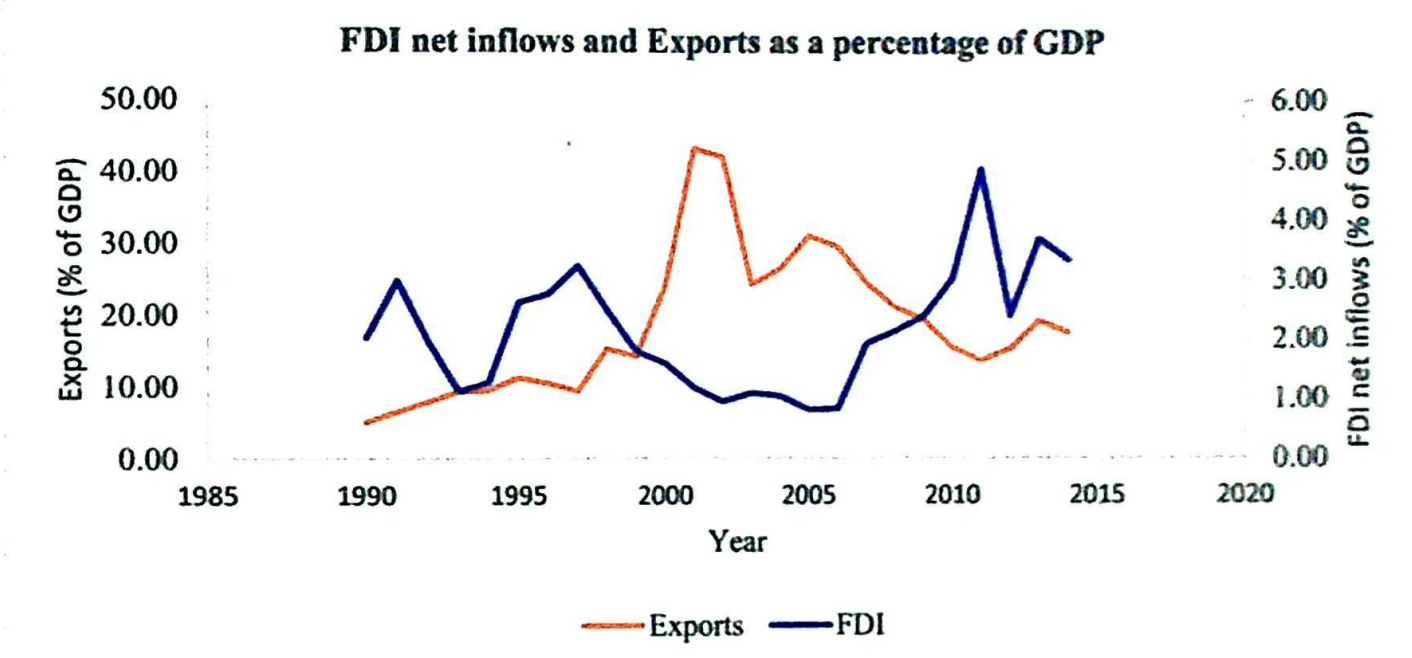


Source: IMF Direction of Trade Statistics, World Economic Outlook Database, The Global Economy.

For decades Myanmar's foreign trade has only contributed a tiny percentage of the country's GDP and the trade openness ratio is lower than in other Asia countries. After the military government took political power in 1988, and the subsequent economic reforms, a large amount of FDI began entering into Myanmar's economy and FDI percentage of GDP was higher than exports percentage of GDP at that time. However, after US sanctions were imposed in 1997, FDI net inflows as a percentage of GDP declined from 3.23% in 1997 to just 0.95% in 2002. The highest point of FDI as a percentage of GDP was 4.85% in 2011 and the lowest point was 0.82% in 2005 after the US 2003 sanctions. On the other hand, exports as a percentage of GDP continued to increase until 2009. However, by 2011 FDI's share of the GDP reached its highest point of 4.85% while exports declined to 13.8 %. This period is

also when the democratically elected government started to take over political power and there were huge FDI inflows into Myanmar's economy during that period. (see Figure 4.2)

Figure 4.2 FDI and Exports share of GDP in Myanmar (1990-2014)



Source: IMF Direction of Trade Statistics, World Economic Outlook Database, The Global Economy.

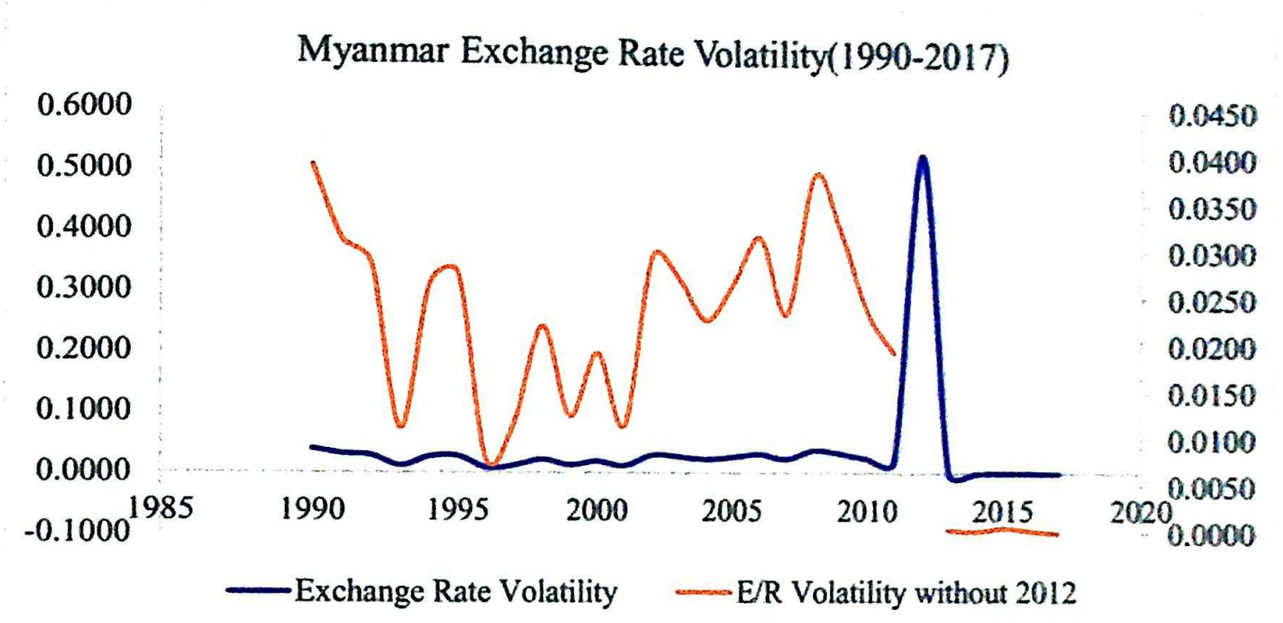
4.1.2 Current Exchange rate System

In the global market, exchange rates are essential not only for improving international trade but also for comparing the prices of goods and services produced in different countries. Myanmar adopted a fixed exchange rate system and external trade by the private sector was conducted by market-determined parallel exchange rates. (Mya Than and Myat Thein (2000). In 1990, the government imposed many restrictions on trade by controlling foreign exchange, which was called the "export first and import second" policy. This policy prompted traders to misreport their trade in accordance with the supply and demand for export earnings. Changes

in this policy allowed importers to settle import bills with foreign exchange that did not originate from formal exports. The pre-reform foreign exchange system in Myanmar had at least two features that exerted adverse effects on the economy. First, administrative controls on foreign exchange and trade segmented the foreign exchange market into the public and private sector. Different exchange rates were applied to the different segments, resulting in an inefficient allocation of resources. Secondly, there was no formal channel for exporters and importers in the private sector to convert currencies, which led them to make transactions in the parallel market, where exchange rates exhibited high volatility (Kubo, 2014).

In April 2012, Myanmar introduced a managed floating exchange rate system and began daily two-way multiple-price auctions of US dollars with authorized dealer banks. Foreign exchange management reform allowed the government to abolish the "export first and import second" policy. After changing to the managed floating exchange rate system, market activities smoothed out and international financial transactions were solved efficiently, exchange rate volatility peaked in 2012. (Figure 4.3).

Figure 4.3 Exchange Rate Volatility in Myanmar (1990-2017)



Source: IMF International Financial Statistics

4.1.3. Trade Restrictions, Uncertainty and Sanction Effect

The Index of Economic Freedom (2007) showed that Myanmar was among the five most repressive economies in the world. International sanctions aimed to restrict financial aid, blocked access to assets, and reversed investment flows. The comprehensive economic sanctions imposed on Myanmar by the United States and OECD countries in 2003 impacted its economy, especially trade and financial development. Alamgir (2011) pointed out that Western trade sanctions curtailed the potential spread of an independent trading class and any concentration of commercial influence that may have arisen in conjunction with such a class. Even though the US had banned new investments in Myanmar in 1997, the US was still the largest export destination for Myanmar's products in 1999–2000 and continued to be one of Myanmar's most important trading partners until 2003.

Due to the United States imposed import sanctions in July 2003, the garment industry was greatly damaged. More than eighty percent of the US's imports from Myanmar were clothes and nearly half of the garment industry's products were exported to the United States. (Kudo, 2005). Most garment firms were part of larger multinational corporations that have direct investments in many developing countries and Myanmar was no exception to this model. Many of the investing companies, which included Japanese and Korean firms, quit their projects in Myanmar. Around 40% of South Korean citizens are reported to have left the country by 2006. The potentially major effect on Myanmar's economy was somewhat offset by other trading partners, especially in Asia.

4.1.4. Influences on investment in Myanmar

Sophisticated regional production networks have formed during the development of Asia and economic roles have changed over time leading to a regional clustering of supply chains based on close industrial interconnections. This has paved the way for closer regional integration, facilitating trade within those supply chains. Myanmar is at the center of an emerging Asia that will drive growth in global trade, investment and middle-class consumption in the coming decades. A favorable point for foreign investors is Myanmar's low labor costs, strategic location and significant domestic market potential, as well as links to larger ASEAN marketplaces, which make it an attractive destination for investment. Myanmar is changing step by step towards democratization and restrictions on doing business are being relaxed, creating huge opportunities for foreign business investment since the US and the EU have suspended sanctions. Special economic zones (SEZs) is also expected to boost exports and

reduce the trade deficit under an export strategy prioritizing value-added manufacturing. The direction of Myanmar's external trade is mainly with Asian countries.

SMEs are the backbone of Myanmar's economy and they can promote not only basic goods and services but also trade, upgrading the standard of living and helping alleviate poverty. Developments intended to promote trade among SMEs are a credit guarantee system to strengthen industrial development, addressing the shortage of electricity and other improvements to an infrastructure that is ranked the lowest among ASEAN countries. Large corporations will continue to need as much help as possible from SMEs until they develop their own complete supply chains.

To promote and invite FDI, the government of Myanmar tried many incentive schemes and policies to attract multi-national enterprises by allowing investment in sectors that needed to be developed, and for the proportionate development of regions and states. A commission may grant one or more tax exemption or relief when investors apply for such exemption or relief (Myanmar Foreign Investment law, 2016). With respect to income tax exemptions, the commission will issue a notification with the approval of the Ministry of the Office of the Union Government to designate the least developed regions as zone 1, moderately developed regions as zone 2, and adequately developed regions as zone 3. Moreover, the income tax exemption is granted to investment businesses in each zone for a period of consecutive years; 7 years in zone 1, five years in zone 2 and 3 years in zone 3. The government may also allow more favorable exemptions and relief for locations where Myanmar citizen-owned businesses are operated or for other economic activities.

There are many significant impediments to efficient investment such as the approval process, contract enforcement, the cost and complexity of doing business, right through to the need to build the economic, financial and physical foundations for a market-based system. Another restrictive point is very weak performance on international measures of the ease of doing business and the quality of the investment climate in Myanmar. In the World Bank's latest *Doing Business Report*, Myanmar ranked 182nd out of 189 economies in 2014 in the administrative and regulatory complexity of starting and operating a local firm, including accessing licenses, electricity availability, credit and property, and the extent of investor protection. This illustrates major deficiencies in Myanmar's business and investment climate and highlights the fact that investing in Myanmar can be time-consuming, costly and risky. Some specific policy and institutional weaknesses that affect Myanmar's attractiveness as an investment destination include 1) human capital, 2) rights and the rule of law (the commercial and legal system in Myanmar fall short of minimum requirements), 3) infrastructure deficit, 4) limited development of financial markets, and 5) weak intellectual property (IP) protection.

4.2. Theoretical background of FDI

The fundamental theoretical framework of FDI was introduced as four distinct schools of thought elucidated by MacDougall (1960), Hymer (1976), Buckley and Casson (1976), Agarwal (1980), Casson (1982), Helleiner (1989), Dunning (1983) and Vos (1994). These are the neoclassical, industrial organization, eclectic, and portfolio choice paradigms.

The conventional *neoclassical paradigm* was framed on a principle concern with international capital flows. It claims that under unconstrained capital mobility between

countries, there are positive welfare effects for both capital exporting and capital importing countries given exclusive factor endowment, the political environment, the expected rate of return, information asymmetries, and government economic policies on taxation and other incentives.

According to the *industrial organization theory*, it is assumed that foreign enterprises have oligopoly-like powers in the host country markets with markets that are imperfect and have barriers to entry derived from unique firm specific attributes such as product technology, managerial skills or economies of scale. Because of this, foreign investors are assumed to consider not only the rates of return, but also the risks associated of a portfolio of foreign investment which takes into account the element of uncertainty accompanying these types of capital flows.

The *eclectic theory* is based on concepts matching the traditional Heckscher-Ohlin-Samuelson trade model seeking to explain the spatial distribution of some varieties of output. Moreover, it tries to explain trade in manufactured and skilled labor-intensive commodities across countries with factor endowment differentials.

Like the industrial organization theory, the *portfolio choice theory* is focused on the element of uncertainty in connection with capital flows and also on the observation that fluctuations in rates of return on capital domestically, and even more so internationally, are not perfectly correlated.

The above theories have been put forward by the researchers to explain foreign direct investment. But no single theory fits the different types of direct investment made by multinational corporations or countries in any given region. The applicability of the approach

differs with the type and origin of investment, and there are also FDI theories that relate FDI to international trade. In previous studies, the determinants of FDI have been divided into three categories. First, a focus on the core factors influencing the decision to invest in a particular country or industry. The second category is more macro-oriented and seeks to establish a functional relationship between FDI and possible determinants. The final category deals with why FDI is preferred to other forms of investment based on resource allocations decisions. When analyzing the main determinants of FDI, country-specific characteristics are widely accepted, especially factors related to the host country market. It is believed that characteristics of host markets are major driving factors of FDI flows (UNCTAD, 1998).

FDI can be classified two different ways. Multinational corporations that replicate their production processes in foreign facilities located near large customer bases are categorized as *horizontal* foreign direct investment. The outcome of the theory of comparative advantage is called *vertical* foreign direct investment (FDI). Vertical FDI is one of the fastest-growing types of FDI, and is behind the large increase in FDI inflows to developing countries and also flows between developed countries dominated by horizontal FDI. Vertical FDI requires a substantial fixed cost investment in a foreign affiliate in a country with the appropriate characteristics (Krugman, Obstfeld & Melitz, 2012).

The impacts of host country trade openness on inward FDI are extensively discussed in previous empirical studies and remain a controversial question (Tolentino, 2010). The *international business theory* claims that FDI is attracted to host countries that easily fit into global production and trade patterns. (Vernon, 1966). One of the studies, (Liargovas & Skandalis, 2005) also provide strong support for the positive relationship between trade

openness and FDI. From a theoretical perspective, exchange rate volatility is seen as a crucial factor that exerts effects on FDI and is usually regarded as an indicator of business risk, according to several academic studies that have highlighted the relationship between FDI flows and the volatility of exchange rates (Tolentino, 2010).

As for a macro-economic perspective, market-seeking FDI is unattractive to countries with unpredictable and volatile inflation rates. High levels of inflation add uncertainty to an investment, such as making price-setting difficult, increasing difficulties in forecasting profit, and causing problems for long-term cooperation. Therefore, high inflation discourages export-oriented FDI. Real exchange rate variability and fixed productive factors influence the location of production facilities for risk-averse investors and their parent companies. Due to a non-negative correlation between export demand and exchange rate shocks, multinational corporations optimally locate some productive capacity abroad, and as exchange rate volatility rises, the capacity share abroad increases and becomes more correlated with export demand shocks (Goldberg & Kolstad, 1995).

Most studies of the determinants of FDI have focused on the pull factors or features of the host countries that attract or deter FDI inflows and have shown that foreign investment is usually not attracted to less developed countries other than for cheap labor, raw materials or favorable relative labor costs. A way that less developed nations can attract more FDI is by developing infrastructure and fundamentally reforming institutions.

4.3. Empirical Literature

There are many studies on trade openness and FDI. Among them, some have found a positive relationship between trade openness and FDI flows (Biglaiser & DeRouen, 2006;

Chakrabarti, 2001). Although it is rare to find, some studies have empirically tested the impact of trade openness on FDI (Tsai, 1994; Asiedu, 2002; Mottaleb, 2007). Others have found a negative relationship between trade openness and FDI inflows. (Seim,2009) Theoretically, Liargovas and Skandalis (2011) mention previous (Dunning, 1993) views that the effect of trade openness on the inflow of FDI varies according to the motivation for engaging in FDI activities.

The impact of openness on trade depends on the type of investment. Alizenman et al. (2005) analyzed two -way linkages of FDI and trade. The result is reasonable of the relationship between FDI and Trade expecting that if goods will be strong and possibly bidirectional. However, it is less evident about the impact of trade on FDI and it should be different for, because countries' stages of development or FDI inflows and outflows react differently with different types of trade flows. The results find that of the linear feedback between trade and FDI by Granger causality test from FDI grows flows to trade openness (50%) and from trade to FDI (31%).

According to Liargovas and Skandalis (2012), trade openness plays a positive and significant role in attracting FDI inflows in the context of developing countries. The authors claim to have found a direct causality in which trade openness leads to foreign direct investment inflows. Their hypothesis is that FDI inflows are positively related to trade openness, so that the higher the trade openness score of a country, the larger the amount of the FDI inflows. Trade openness allows foreign investors to freely enter the country, and to establish their businesses without fearing protectionism, compete locally against local competitors, and exercise their voice with the local governments. Thus, countries with higher

levels of trade openness are more likely to receive FDI inflows than countries with lower levels of trade openness and more trade restrictions (Alshammari, 2015)

The positive impact of trade on FDI has been found to be quite vigorous depending on the type of econometric method used and countries considered, with trade liberalization leading to more FDI inflow in a host country (Babatunde, 2011). Aug* (2007) and Asiedu (2002) studied the determinants of FDI. The results show that infrastructure development and a higher return on investment are important factors that drive the attraction of FDI. Ang (2008) concluded that financial development, infrastructure development and trade openness promote FDI inflow.

Moreover, Neumayer and de Soysa (2005) stated their view that countries that are more open to trade have higher inflows of FDI. Several empirical studies have shown that the role of trade openness and good infrastructure cannot be ignored in the attraction of FDI; Asiedu, 2002, 2003, 2006). The positive impact of trade openness on FDI varies across regions (Asiedu, 2002). Tsaurai (2015) focused on the causal relation between trade openness and FDI in Zimbabwe and proved that there is no long-term relationship between FDI and trade openness in Zimbabwe. According to his analysis, the literature on the relationship between trade openness and FDI has four views (trade openness led FDI, FDI led trade openness, feedback view and the no relationship view).

Mina (2007) proved that trade openness, institutional quality and infrastructural development attracted FDI into Gulf Cooperation Council (GCC) countries. He showed a both positive and significant impact of trade openness on FDI in GCC countries. Kandiero and Chitiga (2006) analyzed the impact of openness to trade on FDI inflows in Africa, especially,

the impact on manufactured goods, primary commodities and services using cross-country data from selected African countries. They find that openness to trade promotes FDI in both sub-Saharan and non-sub-Saharan Africa. Liargovas and Skandalis (2011) found that trade openness contributes positively to the inflow of FDI in developing economies and quoted the view of Omisakin et al., (2009) that FDI inflows are an important source of supply funds for domestic investment and promoting capital formation in the host country.

Exchange Rate Stability is the annual percentage change in the exchange rate of a currency against the United States dollar. It is used here as a proxy for exchange rate risk. According to the risk aversion theory, FDI decreases as exchange rate volatility increases (Kosteletou & Liargovas, 2000). In other words, a stable exchange rate may positively affect FDI. (Liargovas & Skandalis, 2011). Ang (2007) examined the determinants of FDI for Malaysia and the interesting results found that higher macroeconomic uncertainty induced more FDI inflows. According to his point of view, increases in the level of financial development, infrastructure development, and trade openness promote FDI and a higher statutory corporate tax rate and appreciation of the real exchange rate appear to discourage FDI inflows.

Kudo and Kumagai (2014) mentioned the fact that attracting and gaining benefit from FDI is a key challenge for Myanmar. To enhance economic growth in Myanmar, an appropriate policy for attracting foreign investments and absorbing benefits from them are important. These policies include creating a stable macroeconomy, effective financial markets, better infrastructure, an open trade and investment policy and a supply of skilled workers. A

consistent, long-sighted and clear-cut policy on foreign investment is required. Practically no East Asian country has achieved high economic growth without a strong export sector.

Previous studies (Loree & Guisinger, 1995, 2000; Asiedu, 2002) point out the essential impact of available physical infrastructure in the host country on FDI decision making. An empirical model based on panel data can be applied to three approaches: the common intercept model, the random effects model and the fixed effects model (Bushra, Aamrah & Ali, 2003). An analysis of FDI in Latin America with a special focus on the Guyanese economy showed that gross domestic product, imports, exports, infrastructure, and political risk had significant influences on the decision of multinational corporations to invest abroad and proposed specific policy initiatives to stimulate foreign capital inflows to Guyana (Ferris, Thompson, & Valsan, 1997).

4.4. Empirical Framework and Model

There are many points of view concerning how to analyze the determinants of FDI. The determinants of FDI depend on a diversity of characteristics of the host country such as the exchange rate, market size and potential, openness, political stability or risk, labor costs, trade costs and investment costs Bloningen (2014). Balasubbramanyam and Mahambare (2003) showed the impact of FDI on the following locational factors: market-related factors, economic growth-related factors, resource endowments, infrastructure facilities, macroeconomic and political stability, a stable and transparent policy framework, a distortion-free FDI and trade regime and fiscal and monetary incentives. Asiedu (2002, 2003) and Ang* (2005) labeled their variables to evaluate FDI as trade openness, exchange rate volatility and

infrastructure. Liargovas and Skandalis (2011) developed a model in which FDI has five main determinants: (1) exchange rate stability, (2) nominal GDP, (3) GDP per capita, (4) political risk and (5) trade openness. Ang's (2007) model includes the explanatory variables of trade openness, financial development, the annual growth rate of GDP, infrastructure development, the real exchange rate, the statutory corporate tax rate and macroeconomic uncertainty.

Based on earlier works, the empirical model of this study is specified as follows:

$$fdi_{it} = \alpha_i + \beta_1 to_{it} + \beta_2 ervol_{it} + \beta_3 \ln pindex_{it} + \beta_4 labforce_{it} + \beta_5 erc_{it} + u_i + \varepsilon_{it} \quad \text{--------(1)}$$

Where the variable fdi_{it} is the value of FDI net inflows country i during a certain period t, to_{it} means trade openness ratio, $ervol_{it}$ is exchange rate volatility, erc_{it} is electricity production capacity inside the country, $labforce_{it}$ is the labor force, and $pindex_{it}$ is the price index during this period. ε_{it} is the error term, α_i is the fixed effects term and β are coefficients.

Although Tolentino (2010) mentioned that the impact of trade openness in host countries on inward FDI is still a controversial topic for many empirical researchers, this analysis mainly focusses on the impact of trade openness on FDI. The research methodology emphasizes the view of Bushra, Aamrah & Ali (2003) and other previous empirical literature about FDI and uses reliable macroeconomics theories and econometric model by having two focuses of analysis. The first focus is on ordinary least square (OLS) estimation based on a time series data analysis of Myanmar and the second focus is a fixed and random effect estimation of panel data analysis of the trade openness ratio and another priority economic variables impact of FDI in ASEAN countries (excluding Myanmar, Singapore, Brunei and Timor-Leste).

The fixed and random effect model estimators are followed by many researchers who mostly use two methods for estimating unobserved effects panel data models. Even though these methods are somewhat harder to describe and implement, several econometric packages support them. The random effect estimator is useful when the unobserved effect is uncorrelated with all of the explanatory variables (Wooldridge, 2013). One advantage of random effect (RE) is that all explanatory variables are constant over time because the unobserved effect is uncorrelated with those variables (Wooldridge, 2013). In many applications, the primary reason for using panel data is to allow the unobserved effect to correlate with the explanatory variables. In fact, the ideal random effects assumption includes all of the fixed effects assumptions plus, the additional requirement that *ai* is independent of all explanatory variables in all time periods (Woodridge,2012).

4.5. Data Description and Sources of Data

This study based on well-known facts about FDI to prove the model's soundness as a robust empirical methodology concerning international trade and investment. The dependent variables are the FDI net inflow value in millions of current US dollars and FDI net inflow value as a percentage of GDP. In the second part, a cross section of fixed and random effects using balanced panel data of annual FDI net inflow values of eight ASEAN countries (Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, and Vietnam) while excluding Brunei, Timor-Leste and Myanmar. The data period covers 25 years (1990–2014) for both types of estimation.

Table 4.1 Data Description (Myanmar Model, Time Series Data Analysis)

VARIABLES	N	UNIT	MEAN	MAX	MIN	STD. DEV.
FDI inflows (*fdi*)	25	US$ million	660	2539	104.7	732.5
FDI inflows (% of GDP) (*fpgdp*)	25	percent	2.14	4.85	0.82	1.02
Trade openness (*to*)	25	ratio	0.38	0.81	0.13	0.16
Export (% of GDP) (*xpgdp*)	25	percent	18.65	43.21	5.11	10.18
Exchange rate volatility (*ervol*)	25	Std. Dev	0.04	0.53	0.0002	0.1
Price index (*pindex*)	25	index	3.07	4.78	0.51	1.41
Electric capacity production (*erc*)	25	Million kilowatts	5.78	13.75	2.4	2.9
Labor force (*labforce*)	25	millions	22.19	24.56	18.58	1.78
Year dummy (ydummy)	25		0.04	1	0	0.2

Sources: IMF (IFS, DOTs), Key Indicators for Asia and the Pacific (2008, 2016), theGlobalEconomy.com, World Economic Outlook Database (2017).

Data was sourced from the International Monetary Fund (IMF) issued *International Financial Statistics* (IFS), *Direction of Trade Statistics* (DOTs), and the *IMF World Economic Outlook Database* (2017). Other data came from *Key Indicators for Asia and the Pacific* (2008, 2016), and The Global Economy website (theglobaleconomy.com). Some data are shown in current US dollars (US$) due to the availability of reliable data.

FDI data gathered from *Key Indicators for Asia and the Pacific* (2008, 2016) as net foreign direct investment inflows described in US$ in millions. Trade data collected from *Direction of Trade Statistics* (DOTs) is described in US$. Exchange rate volatility is US$ per domestic currency rate calculated from the monthly exchange rate data in the IMF *International Financial Statistics* (IFS) by computing the standard deviation of each year with 2000 as the base year. Labor force (*labforce*) counts people ages 15 and older who supply

Table 4.2 Data Description (ASEAN Model, Panel Data Analysis)

variables	N	UNIT	MEAN	MAX	MIN	STDEV.
FDI inflow (*fdi*)	200	US$ million	4894	69540	-4702	10594
FDI inflow (% of GDP) (*fpgdp*)	200	percent	4.67	26.52	-2.54	5.36
Export (% of GDP) (*xpgdp*)	200	percent	74.21	377.61	2.85	71.64
Trade openness (*to*)	200	ratio	1.29	4.1	0.06	0.95
Exchange rate volatility (*ervol*)	200	Std. Dev	0.0772	2.9443	0	0.2716
Price index (*pindex*)	200	index	81.5	240	5.64	39.4
Labor force (*labforce*)	200	millions	29.2	123.06	1.51	31.74
Electric capacity production (*erc*)	200	Million kilowatts	52.62	216.26	0.2	48.6

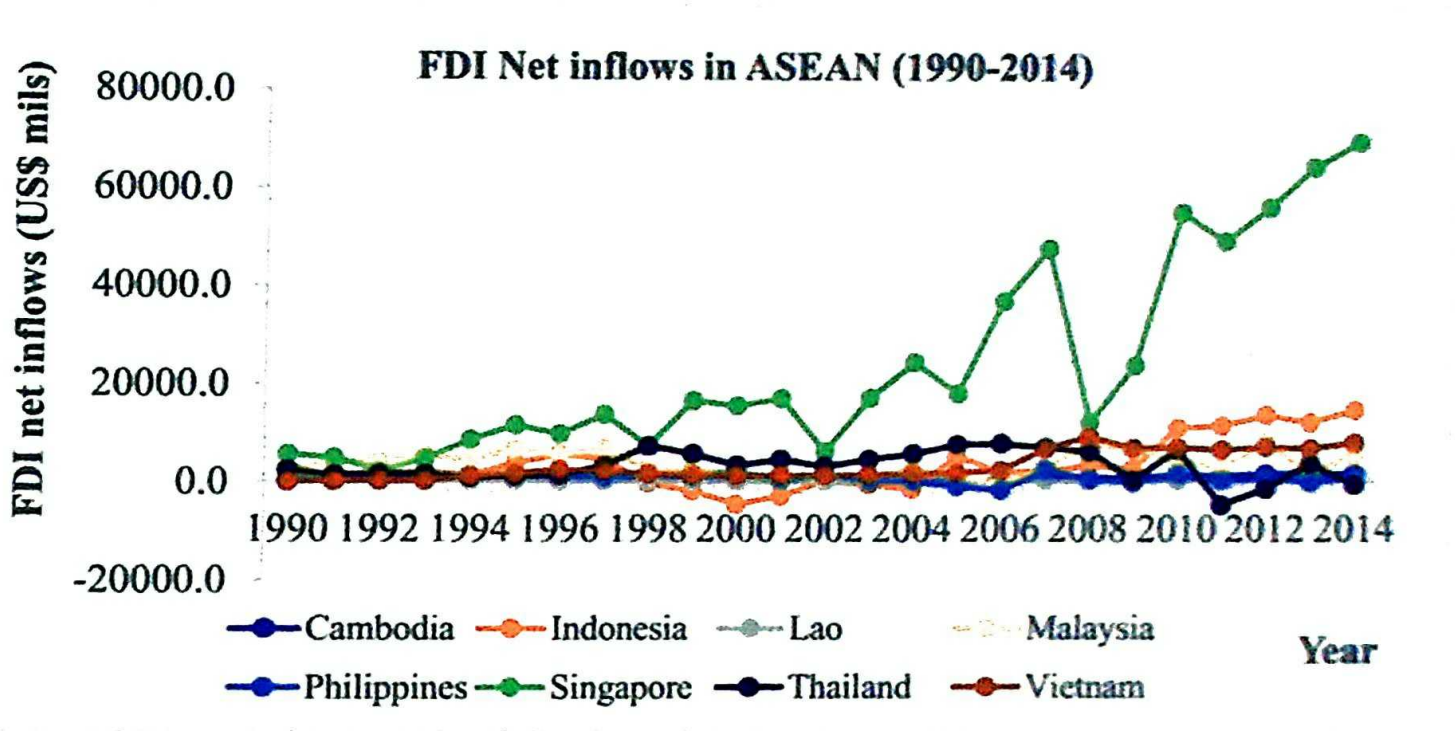
Sources: IMF (IFS, DOTs), Key Indicators for Asia and the Pacific (2008, 2016), theGlobalEconomy.com, World Economic Outlook Database (2017).

labor for the production of goods and/or services during a specified period. It includes people who are currently employed, people who are unemployed but seeking work and first-time job-seekers. Not everyone who works is included, however. Unpaid workers, family workers, and students are often omitted, and some countries do not count members of the armed forces. Labor force size also tends to vary during the year as seasonal workers enter and leave (The Global Economy). Electric capacity production (*erc*) is shown by total installed electricity capacity (million kilowatts). Price index (*pindex*) and GDP are collected from the *World Economic Outlook Database* (2017).

Figure (4.4) shows the growing trend of FDI inflows into ASEAN countries from 1990-2014. Among the eight countries, Singapore is the largest FDI recipient, although FDI decreased significantly in 2008 during the international financial crisis. Indonesia followed Singapore in increased FDI inflows. However, Malaysia, Vietnam and Thailand slightly

caught up in FDI inflows towards the end of the time period. Cambodia and Laos had the least FDI inflows and have not seen massive FDI inflows in recent years.

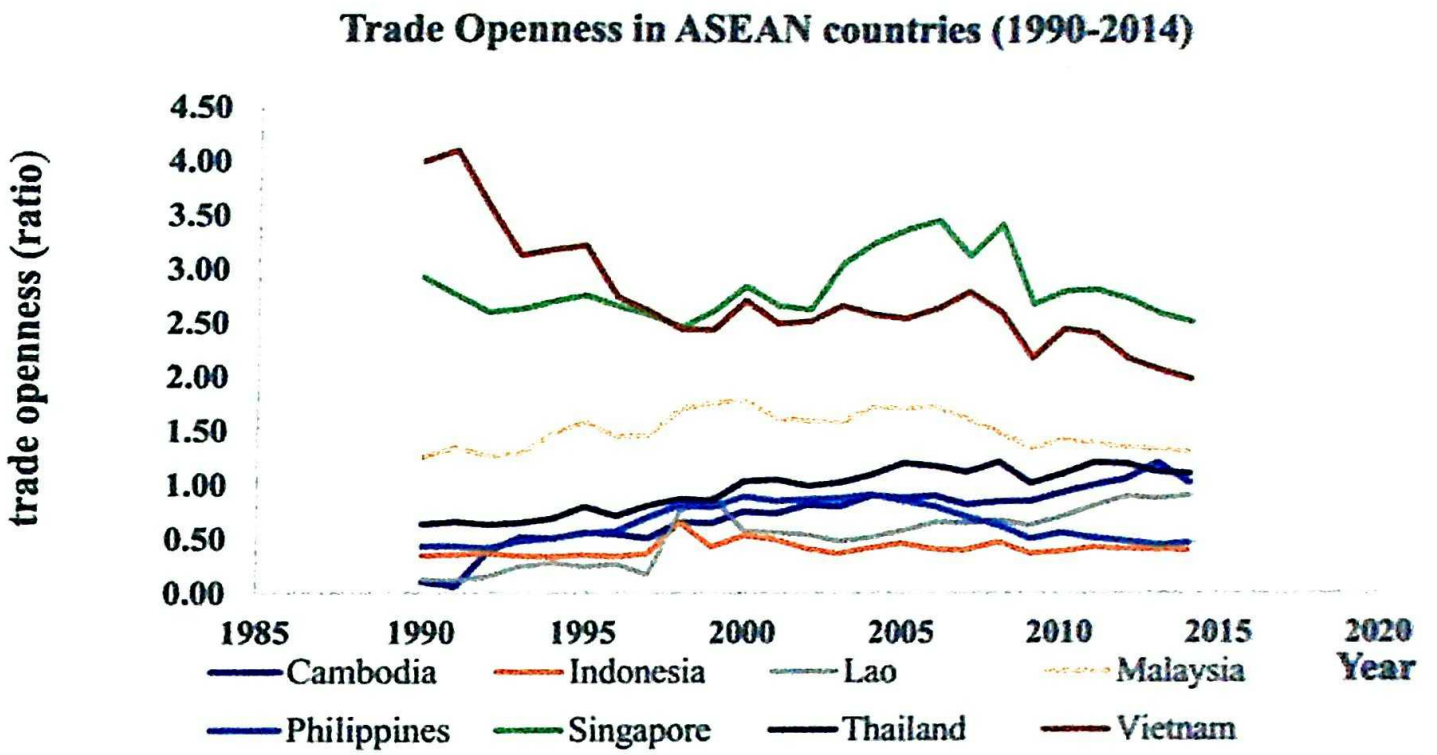
Figure 4.4 FDI net inflows in ASEAN countries



Sources: Key Indicators for Asia and the Pacific (2008, 2016)

For years, many Asian countries have adopted an export growth and outward looking development policy. However, a low trade openness ratio for a country does not necessarily indicate high obstacles to foreign trade,but could be due to factors such as size and geographic remoteness from potential trading partners. Singapore and Vietnam have the highest trade openness ratios of all of the countries in this study. Singapore leveraging its vantage point on the international shipping route along the Malacca Strait and its geographic proximity to two major global producers of tropical products to become a leading regional and global player in trans-shipment, processing, and services (Intal & Chen, 2017). Vietnam enacted many economic reforms, especially regarding trade and FDI. However, since 2010 the trade openness in Singapore, Malaysia and Vietnam has decreased. (see Fig 4.5)

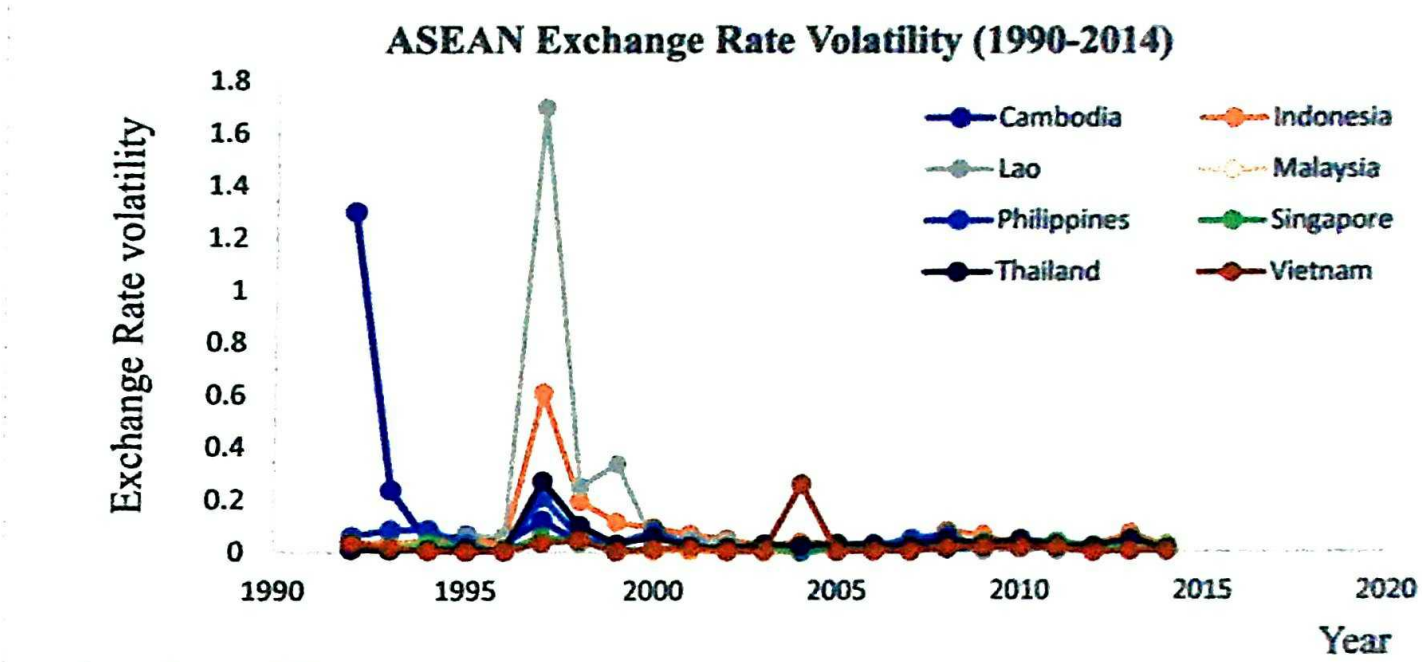
Figure 4.5 Trade Openness in ASEAN countries



Sources: IMF Direction of Trade Statistics

Exchange rate volatility was calculated based on the year 2000 (Figure 4.6). In 1997, the Asian Financial Crisis (AFC) impacted many ASEAN countries and Indonesia, Malaysia, Thailand, the Philippines and Laos had higher exchange rate volatility than Singapore, Vietnam and Cambodia did. Although the Global Financial Crisis (GFC) in 2008 had a large effect on the US and some other countries, ASEAN countries' exchange rates did not experience much volatility. The AFC and the GFC were two watershed events where exchange rate regimes broke down, at least temporarily, as evidenced by large depreciations and currency volatility during those episodes. (IMF working paper, 2016).

Figure 4.6 Exchange Rate Volatility in ASEAN countries



Base Year 2000=1

Sources: IMF International Financial statistics

4.6. Results Discussion, Policy implication and Conclusion

The empirical model was analyzed based on two dependent variables, FDI net inflow values and FDI percent of GDP using time series data analysis of OLS estimation for Myanmar's FDI model. (Tables 6.1 and 6.2). Standard errors were calculated both in the usual way and with multicollinearity diagnostic tests in each table. In addition, these outcomes had serial correlation checking and removed from each model's estimation. After checking the unit root test, the results were better and more valid than previous estimations with the original data. Some variables represent first difference, and some are second difference data estimations. Because of multicollinearity diagnostic tests in year dummy and exchange rate

volatility, when the year dummy is skipped in the estimation the outcomes are better than the previous estimations.

For the ASEAN model, each regression was estimated using cross section effect and random effect and standard errors were calculated heteroscedasticity robot standard error and solved with a multicollinearity diagnostic test in estimation. The estimation was divided into two cases; an ASEAN 8 estimation and an ASEAN 7 estimation (leaving out Singapore) even though the outcomes were not so different between them.

Both explained variables prove significant in the estimation model. F statistic was mostly significant in all of the estimations. For Myanmar, FDI net inflow value as a percentage of GDP can explain better than the FDI net inflows. Generally, the Hausman-Taylor test result shows that a fixed effect model is appropriate for ASEAN 8 and a random effect model is appropriate for ASEAN 7. There is a slight difference between the outcomes of trade openness ratio and export ratio of GDP when estimated separately.

4.6.1. The OLS regression estimations

For Myanmar, many different types of estimation were done. (1) All variables, (2) exports as a percentage of GDP, (3) other variables without trade effect, (4) all variables without year dummy, and (5) only trade openness and exchange rate volatility.

In Table (4.3), trade openness and exports per GDP ratio are directly related to FDI net inflow values and both are insignificant in all estimations. These results match with Liargovas & Skandalis (2012), Alshammari (2015), and Babatunde's (2011) views on the positive effect of trade on FDI, and that trade liberalization leads to more FDI inflow in a host country.

Myanmar faced the US and Europe's long-term sanctions. If Myanmar adopted a free trade policy and sanctions do not impact the trade sector, Myanmar can build the foreign investors' trust in investing in the country. Exchange rate volatility can explain Myanmar FDI net inflows and were negatively related and significant at a 1% and 5% level in all estimations except when including year dummy. Kosteletou and Liargovas (2000) and Liargovas and

Table 4.3 Regression results (Myanmar FDI net inflows)

	Dependent Variables (Fdi Net Inflows)				
variables	1	2	3	4	5
constant	106	143	161	134	237
	(341)	(150)	(147)	(152)	(148)
Trade openness (1st diff)	1071	-	-	1022	434
	(1394)			(1255)	(1307)
Export per GDP(1st diff)	-	16.8	-	-	-
		(20.6)			
Exchange rate volatility	-2680	-4082**	-4251***	-4046**	-5809***
	(14663)	(1427)	(1399)	(1434)	(1314)
Electricity Production (2nd Diff)	506*	496*	440*	504*	-
	(266)	(255)	(243)	(257)	
Price Index (2nd Diff)	5.49	6.81	6.73	5.28	-
	(24.2)	(23.3)	(23.1)	(23.4)	
Labor Force (2nd Diff)	1733	2263	2176	1697	-
	(2958)	(2787)	(2759)	(2846)	
Year Dummy	-694	-	-	-	-
	(7418)				
F-Statistic	4.86***	6.19***	7.72**	6.19***	9.89***
R-Squared	0.65	0.65	0.63	0.65	0.49
No: Of Observation	23	23	23	23	23

1. *, **, *** statistical significance of 10%, 5%, and 1% respectively
2. (1) All variables
   (2) Exports as a percentage of GDP
   (3) Other variables without trade effect
   (4) All variables without year dummy
   (5) Only trade openness and exchange rate volatility

Skandalis (2011) showed that FDI decreases as exchange rate volatility increases and that a stable exchange rate may affect positively FDI. The results of this model mainly support that exchange rate stability can increase FDI inflows to Myanmar. Although Myanmar officially used a fixed exchange rate system, the actual condition was more similar to a multiple exchange rate system.

The coefficient of electricity production is positively related to FDI inflow, but it is only 10% significant. To attract FDI into a country, electricity production is essential for a stable business environment and this critical infrastructure can't be neglected. This matches with Ang's (2007, 2008) views that infrastructure development promotes FDI. If Myanmar can provide sufficient electrical energy for business operations, investors will note this fact favorably when deciding whether to do business in Myanmar. Other variables were statistically insignificant in each estimation. The labor force is directly related to FDI net inflows and insignificant. Although Myanmar is one of the most labor abundant countries in Asia, FDI inflows did not strongly impact the labor force. Because many ASEAN countries are labor abundant countries, only skilled labor is a critical point for foreign investors. If foreign investors can efficiently use skilled labor, it could generate many opportunities for employment in Myanmar, and be a favorable point for foreign investors to invest in Myanmar. In all regressions, the F-statistic was significant and R^2 can explain explained variables over 60 percent.

Table 4.4 The OLS Regression results (Myanmar FDI net inflow as a % of GDP)

	Dependent Variables (FDI % Of GDP)				
Variables	1	2	3	4	5
Constant	0.01	0.31	0.33	0.29	0.19
	(0.46)	(0.2)	(0.2)	(0.21)	(0.21)
Trade Openness (1st Diff)	1.82	-	-	1.33	2.24
	(1.9)			(1.73)	(1.9)
Exports Per GDP (1st Diff)	-	0.02	-	-	-
		(0.03)			
Exchange Rate Volatility	9.5	-4.22**	-4.41**	-4.14*	-4.09**
	(19.96)	(1.98)	(1.92)	(1.98)	(1.92)
Electricity Production (2nd Diff)	-0.22	-0.26	-0.33	-0.24	
	(0.36)	(0.35)	(0.34)	(0.36)	
Price Index (2nd Diff)	0.01	0.01	0.01	0.01	
	(0.03)	(0.03)	(0.03)	(0.03)	
Labor Force (2nd Diff)	12.48***	12.84***	12.7***	12.12***	
	(4.02)	(3.87)	(3.8)	(3.93)	
Year Dummy	-6.94	-	-	-	
	(10.09)				
F-Statistic	3.03**	3.6***	4.5**	3.67**	3.06**
R-Squared	0.53	0.51	0.5	0.52	0.22
No: of Observation	23	23	23	23	24

1. *, **, *** statistical significance of 10%, 5%, and 1% respectively
2. (1) All variables
   (2) Exports as a percentage of GDP
   (3) Other variables without trade effect
   (4) All variables without year dummy
   (5) Only trade openness and exchange rate volatility

Table (4.4) shows explanatory variables impact on Myanmar FDI net inflow as a percentage of GDP. Like the FDI inflows model, trade openness and exports per GDP were directly related to FDI per GDP but insignificant in estimation. Long-term sanctions affected the trade sector's ability to contribute to the GDP ratio significantly and impact FDI per GDP. Some previous studies reported that not only were trade and FDI related to each other but

could also contribute to GDP. The coefficient of exchange rate volatility was inversely related and significant in all estimations. The larger the exchange rate stability in Myanmar, the greater the FDI flows in GDP will increase. Labor force is positively related to the FDI per GDP ratio and significant at a 1% level. When FDI inflow increases, the existing labor force can be used efficiently and contributes to GDP. The coefficient of electricity production inversely impacts FDI per GDP and was statistically insignificant. In all regressions, the F-statistic was significant and R^2 can explain explained variables over 50 percent.

4.6.2 The Fixed Effect and Random Effect estimation

To compare ASEAN 8 trade openness and other variable impacts one FDI net inflows, an ASEAN 7 (without Singapore) analysis was done. When skipping the trade openness variable in estimation, nearly the same outcome appeared. Singapore is a highly developed country and is the brightest economy in ASEAN even though it has the smallest amount of land in the region. Different types of estimations are shown in these tables to describe the outcome of the model. The Hausman-Taylor test showed that a fixed effect is appropriate for ASEAN 8, but if Singapore is left in the estimation, then a random effect model is appropriate.

Table 4.5 The Fixed and Random Effect results (ASEAN 8 FDI net inflows)

	Dependent Variables (FDI Net Inflows)			
	FEM (All variables)	FEM Without TO	REM (All Variables)	REM Without TO
Constant (c)	5654	4117**	-695	2384
	(3530.4)	(1728.1)	(1874.9)	(4393)
Trade Openness (to)	-1011	-	1742	-
	(1789.3)		(1310.9)	
Exchange Rate Volatility (ervol)	1681**	1912**	1943**	1741**
	(734.5)	(735.5)	(829.4)	(780.2)
Electricity production (erc)	73***	72***	56.02***	59.8***
	(22.9)	(23)	(19.03)	21.3
Price Index (pindex)	49***	49***	39.3***	43***
	(15.2)	(15.1)	(12.7)	(14.2)
Labor Force (labforce)	-254**	-245**	-101	-148
	(117.8)	(112.7)	(62.4)	(100.5)
F-statistic	17.7***	19.3***	4.09***	4.97***
R^2	0.53	0.53	0.09	0.09
No: of obs:	200	200	200	200

*, **, *** statistical significance of 10%, 5%, and 1% respectively. Standard errors are heteroskedasticity robot methods.

Table 4.6 Fixed Effect and Random Effect results (ASEAN 8 FDI as a % of GDP)

	Dependent Variables (FDI Net Inflows Percentage of GDP)			
	FEM (All variables)	FEM Without TO	REM (All variables)	REM Without TO
Constant (c)	1.59	3.28***	1.18	3.62
	(1.35)	(0.63)	(1.28)	(2.33)
Trade Openness (to)	1.1	-	1.9**	-
	(0.93)		(0.91)	
Exchange Rate Volatility (ervol)	1.89**	1.63**	1.97**	1.62**
	(0.83)	(0.81)	(0.84)	(0.81)
Electricity Production (erc)	-0.04***	-0.03***	-0.03***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.009)
Price Index (pindex)	0.04***	0.04***	0.04***	0.04***
	(0.01)	(0.007)	(0.01)	(0.007)
Labor Force (labforce)	0.01	-0.001	-0.02	-0.02
	(0.04)	(0.04)	(0.02)	(0.04)
F-statistics	40.6***	43.8***	7.6***	5.8***
R^2	0.72	0.72	0.16	0.11
No. of observations	200	200	200	200

*, **, *** statistical significance of 10%, 5%, and 1% respectively. Standard errors are heteroskedasticity robot methods.

The trade openness ratio is directly related to FDI net inflows but insignificant. However, trade openness was significant in FDI as a percentage of GDP. Liargovas and Skandalis (2011) and Kandiero and Chitiga (2006) found that trade openness contributes positively to the inflow of FDI in developing economies. Meaning that the more open the trade, the larger the FDI inflows contribution to GDP. Trade openness plays a harmonizing role to FDI inflow in ASEAN countries since Indonesia, Malaysia, Thailand, Singapore and the Philippines have long used an open-door policy and FDI driven export growth strategy. Trade openness reduces the weaknesses of trade barriers and ultimately allows the import of materials and machinery

as well as exports to foreign markets. This echoes former studies on the positive relationship between openness and inward FDI. (see Tables 4.5 and 4.6)

The results found the expected signs of the key variables; exchange rate volatility, labor force and price index were positive and statistically significant in all estimations. Exchange rate volatility's impact on FDI is positive and significant which means that exchange rate volatility directly effects FDI net inflows in ASEAN 8 countries and the more the exchange rate fluctuates, the greater the FDI inflow. In the past, many ASEAN countries adopted FDI based on an export driven growth strategy. East Asian countries' experiences show that an export driven growth strategy can attract FDI inflow and if the trade sector improves and freer trade policies are adopted, even more FDI will enter, and the host country can absorb benefits such as technology, management skills, employment and foreign expertise.

Even though many ASEAN countries faced the Asian Financial Crisis 1997, FDI inflows into these countries did not stop, but there was an impact on Thailand, Singapore and Malaysia. The extent of exchange rate changes and turning points differ across ASEAN countries they have also adopted different exchange rate systems. An IMF Working Paper (2016) showed that Indonesia, the Philippines, and Thailand "target" inflation and profess floating exchange rates, while Malaysia and Singapore "monitor" the value of their currencies against undisclosed baskets. Singapore relies on the exchange rate to conduct its monetary policy.

Electric production capacity and the price index are positively related and statistically significant at 1% and 10% respectively and can be proven in all types of estimation. Electric production capacity is positively related to FDI net inflows, meaning that if the host country

can produce a sufficient level of electricity, FDI inflows will increase. However, producing more electricity can incur expenditures and be inversely related to GDP. Price stability in the country is a favorable point to attract FDI. The labor force is indirectly related to FDI net inflows but statistically insignificant. Practically speaking, a host country should have ea large enough labor force as well as enough skilled labor to persuade foreign investors.

Tables (4.7) and (4.8) show the empirical results of the effects of FDI net inflows and FDI as a percent of GDP in the ASEAN 7 model.

Table 4.7 The Fixed Effect and Random Effect results (ASEAN 7 FDI net inflows)

	Dependent variables (FDI Net Inflows)			
	FEM (All variables)	FEM Without TO	REM (All Variables)	REM Without TO
Constant (c)	-15669**	-18687**	-4380	-6158
	(7528)	(8242)	(4553)	(4707)
Trade Openness(to)	-2087**	-	-735	-
	(929)		(821)	
Exchange Rate Volatility ervol	134	393*	212	293
	(278)	(237)	(279)	(246)
Electricity Production (erc)	163***	157***	154***	155***
	(44.7)	47	(48.36)	49.9
Price Index (pindex)	17.3***	10.62**	12.17**	9.38**
	(4.86)	(4.14)	(4.96)	4.74
Labor Force (labforce)	222**	246**	56.46	74.86
	(104)	(111)	58.02	60.5
F-statistic	12.3***	12.74***	13.12***	16.18***
R^2	0.45	0.44	0.28	0.28
No. of Observations	175	175	175	175

*, **, *** statistical significance of 10%, 5%, and 1% respectively. Standard errors are heteroskedasticity robot methods.

Trade openness had a negative effect on FDI net inflows significant at a 5% level only in the fixed effect estimation,but was insignificant in the random effect model. This matches the analyses of Seim (2009) and Tsaurai (2015). This result also found the impact on FDI per

GDP. Exchange rate volatility was directly related to FDI inflows and FDI as a percentage of GDP significant at 10%. This means that the larger the exchange rate volatility in the host country, the more FDI inflows can contribute to the GDP. The larger the price index effect, the greater the impact on FDI and this means that price stability is a critical point contributing to FDI per GDP for ASEAN countries. However, Tshifhiwa Vitor (2011) mentioned a negative relationship between the price index and FDI. The labor force participation rate and electric production capacity was not different from the ASEAN 8 analysis.

Table 4.8. Fixed and Random Effect results (ASEAN 7 FDI net inflow % of GDP)

	Dependent Variables (FDI Percentage of GDP)			
	FEM (All variables)	FEM Without TO	REM (All Variables)	REM Without TO
Constant (c)	-14.7	-14.8*	-4.42	-5.03
	(8.91)	(8.83)	(4.37)	(5.36)
Trade Openness (to)	-0.07	-	0.73	-
	(0.8)		(0.67	
Exchange Rate Volatility (ervol)	1.55*	1.56*	1.43*	1.4*
	(0.82)	(0.82)	(0.86)	(0.84)
Electricity Production (erc)	-0.15***	-0.15***	-0.09***	-0.14***
	(0.03)	(0.03)	(0.06)	(0.02)
Price Index (pindex)	0.04***	0.04***	0.03***	0.03***
	(0.007)	(0.006)	(0.006)	(0.006)
Labor Force (labforce)	0.23**	0.24*	0.09	0.1
	(0.12)	(0.12)	(0.06)	(0.07)
F-statistic	18.5***	20.4***	10.3***	11.2
R^2	0.56	0.56	0.23	0.21
No. of observations	175	175	175	175

*, **, *** statistical significance of 10%, 5%, and 1% respectively. Standard errors are heteroskedasticity robot methods.

Table (4.9) shows the results of the Hausman-Taylor test. According to the results, the χ^2 test is mostly insignificant in many types of estimation and cannot reject H_0 (the random effect

model is appropriate) and therefore the random effect model is appropriate for this analysis. Generally, random effect is better than fixed effect because fixed effect is based on time invariant variables.

Table 4.9 Results of the Hausman-Taylor Test

Dependent Variable	ASEAN 8	ASEAN 8	ASEAN 7	ASEAN 7
	(All Variables)	Without Trade	(All Variables)	Without Trade
FDI Net Inflows	FEM	REM	REM	REM
FDI Net Inflows as a % of GDP	FEM	REM	REM	REM

4.7 Policy Implication and Conclusion

FDI is one favorable determinant of economic development for developing countries. Some ASEAN countries (especially Singapore, Thailand, Malaysia, Indonesia and the Philippines) absorbed FDI efficiently which increased their GDP. Likewise, Vietnam is also accelerating their adoption of free trade policies which is catching up the country's FDI inflow. Currently, these ASEAN countries have already achieved their economic momentum applied by FDI inflow to their economies. Trade openness and exchange rate stability are the essential key points for promoting FDI inflow for ASEAN countries. However, due to the previous long-term US and EU sanctions, Myanmar's economy cannot promote the trade sector and this is a weak point for attracting foreign investment. Currently, the lifting of the US and EU sanctions has allowed Myanmar an opportunity to surge and expand export-oriented industries to penetrate the intra-regional markets of India, China and Thailand, as well as traditional export markets such as the United States and the European Union.

Myanmar is a labor abundant country like other ASEAN countries and has a comparative advantage in lower labor cost for attracting FDI in export-oriented labor-intensive sectors although this has not been applied efficiently yet. Myanmar tries to promote the export of value-added and finished goods instead of exporting raw materials. To promote export-oriented private industries, foreign investment is an essential source of capital for capital deficient country like Myanmar. Myanmar needs to improve their infrastructure to allow businesses to operate smoothly to attract more FDI. Currently Myanmar has considerable political stability which is a key point for both the trade sector and FDI.

This study was based on two types of data analysis; a time series data analysis of Myanmar FDI inflows and a panel data analysis of ASEAN 8 FDI inflow with fixed effect and random effect models checked with Hausman-Taylor test. For Myanmar, trade openness and export per GDP variables had positive effects on FDI but were insignificant. Exchange rate volatility was inversely related to FDI due to Myanmar's long-time usage of a multiple exchange rate system.

However, in the ASEAN analysis, the trade openness and export per GDP ratio were directly related to FDI inflow as a percentage of GDP, and it can be proved that a nation's free trade policies strongly contribute to FDI inflows per GDP. The larger the exchange rate volatility, the greater the impact on FDI inflow in ASEAN for both explained variables. Electricity production and the price index also can explain the model's specification. The analysis model can prove that exchange rate volatility's impact on FDI inflows is an appropriate variable to explain Myanmar's FDI inflow and that trade openness effects on FDI inflow per GDP were proven in the ASEAN analysis.

CONCLUSIONS

This study has explored the inter-relationship between trade and FDI by analyzing the future potential of Myanmar's trade and other essential variable impacts on FDI. Moreover, this analysis comparatively studied eight ASEAN countries' trade and FDI undertakings and economic growth achievements. Additionally, this study highlighted the on-going process of the relationship between trade and FDI in developing countries, especially in Myanmar, where developing the nation's economy is a huge influence on the process.

This work has laid out the evolution of trade and FDI in Myanmar as a case study by describing the different historical eras. It has confirmed the trade structure, flows, patterns and policy implications of Myanmar's economy in different time periods and under different economic systems that were adopted. In addition, there was an examination of influential determinants of foreign direct investment with justifications as to why these factors are critical and specifically why they are crucial for Myanmar and other developing countries.

Major contributions and implications

This study showed the overall evolution of trade and FDI in Myanmar's economy, the determinants of FDI and the current FDI situation in Myanmar, the trade structure, pattern and trade flows in Myanmar along with the impacts of trade and other variable impacts on FDI in both Myanmar and comparatively with other ASEAN countries. The empirical analysis of Myanmar's trade structure employed an augmented gravity model to test the hypotheses developed in the study and fixed and random effect models showed strong support for proving the model

specification. The quantitative and empirical analysis of trade openness and other variable impacts on FDI shows the impact of Myanmar's trade competitiveness on FDI inflows in comparison with other ASEAN countries.

Myanmar's implementation of its trade policy has allowed for failures of achievability, reliability, suitability, simplicity, and stability. Likewise, a multilateral trading system could bring a wide range of opportunities for Myanmar's exports and overcome its supply-side constraints. Attracting and benefiting from FDI is a key challenge for Myanmar and appropriate general policies to enhance economic growth, a stable macroeconomic policy, effective financial markets, better infrastructure, more reliable trade and investment policy and support for skilled labor are needed. Nowadays, adopting an open-door policy and creating the economic opportunities to build a modern developed nation, Myanmar's government needs to focus on FDI inflows. Most of the investment that Myanmar has received until now has gone into natural resource sectors with only a negligible role for foreign investors in manufacturing or services.

Myanmar's FDI growth has lagged compared with neighboring countries and total FDI is also much lower than that of neighboring countries. Some economic experts claim that if Myanmar chooses the right national development strategy, learns from the experiences of other economies on a similar path, and promotes adequate preparations for attracting FDI irrespective of the realization of an investment boom in the country, Myanmar can catch up to its neighbors and partners in the region by enhancing open trade and investment strategies.

Although the government is currently supporting value-added economic activities, exports continue to be heavily concentrated in raw materials such as natural gas, gems and

other minerals. The country has weak transaction rules and regulations, and especially domestic reforms are necessary to build international confidence. Economic experts expect that some US and European investors might invest in the Thilawa SEZ in near future, the government need to overcome some massive obstacles such as that of insufficient power, communications, roads, railways, bridges and ports to raise production to attract investment in the manufacturing sector. In this way, the growth of commercial and investment ties can lift the country's trade and growth potential.

Myanmar's trade structure and trade flows were compared with its trading partners and analyzed with gravity model of trade. Based on this study's empirical results, the gravity model can explain Myanmar's trade structure and flow completely.

Though endowed with many natural and human resources, Myanmar's economic development is lagging behind that of other South East Asia countries. Myanmar could not utilize her resources efficiently for an extended period due to Western sanctions. These long-term sanctions hampered trade sector and trade flow development, hindered foreign direct investment, dampened investor enthusiasm and made for weak bilateral trade with Western countries and as a result, neighboring countries like Thailand and China became the main trading partners for Myanmar.

In addition, foreign exchange rate instability seriously affects trade sector development and a nation's trade value. Checking Myanmar's trade structure with the Trade Conformity Index highlights the increasingly competitive trade structure as trade volume increases with falling complementary trade and represents a differentiated product model with intra-industry trade.

In the future, Myanmar's trade potential may improve not only with ASEAN partners but also globally, thereby enhancing Myanmar's role as a trading nation is a turning point. When the Democratic government took power and changed the administrative system, Myanmar gained the potential to create new economic opportunities to promote the trade sector. Myanmar still needs its ties for economic cooperation with ASEAN for trade improvement because Myanmar's total trade value is far behind all other ASEAN members, except for Thailand. To harmonize with the principles of transparency, simplicity, efficiency and consistency to further integrate with the ASEAN Single Window (ASW) for customs clearance, Myanmar has implemented a National Single Window (NSW).

The ASEAN countries of Singapore, Thailand, Malaysia and Indonesia and the Philippines have been especially efficient at absorbing FDI to promote their GDP, so Myanmar might be able to achieve economic growth by inviting more FDI inflows. Due to prior trade restrictions, Myanmar's economy and trade sector have been weak at attracting foreign investment. However, the current economy is favorable for Myanmar's economy to expand exports and to penetrate the intra-regional markets in India, China and Thailand, as well as traditional export markets, such as the United States and the European Union. To promote exports, some activities will be necessary, such as supporting skilled labor, absorbing updated technology, upgrading infrastructure facilities with modern technology and importing equipment to produce quality products. As a newly prosperous country, any foreign exchange rate monitoring policy should be effective and intentionally react to foreign exchange markets. To open trade and capital flow to what is a relatively small economy, there is a need to monitor

exchange rate stability to avoid changes in the value of the trade-weighted effective exchange rate, both nominal and real.

Finally, this study determined the impact of trade and exchange rate volatility on foreign direct investment in Myanmar by comparing it with eight ASEAN countries. Both explained variables utilized in each estimation could be explained. The trade openness ratio was directly related to FDI net inflow and proved that a nation's free trade policy affected FDI inflow for ASEAN countries, but did not prove an effect in an FDI inflow analysis of Myanmar. Exchange rate volatility's impact on FDI inflow was significantly to Myanmar's FDI inflow but wasn't related to ASEAN FDI inflow. If exchange rate volatility increases, FDI inflow will decrease. If a host country's export sector improved, FDI inflow also increased. The favorable export market of a host country can attract FDI.

Limitations of the study and suggestions for future research

There were some restrictions in this study, especially those arising from limitations in data. While the research compared bilateral trade between Myanmar and other trading partner countries, some variables were skipped in this research due to limited ability of data about Myanmar. One of the weak points of this analysis is the absence of a comparison of Myanmar versus ASEAN exchange rate volatility. In addition, some of previous empirical studies of trade openness and exchange rate volatility's impact on FDI have been conducted at an industry or firm level. Studying the relationship between trade and FDI at a firm or industry level can provide greater and more accurate insight into the interaction of trade and FDI. However, FDI and some other required data was unavailable. In the future, it would be

interesting to obtain enough valid data to further research the relationship between trade and FDI not only for Myanmar, but also for other ASEAN countries.

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Notes

Attending and presenting papers in International Conference

1. Khin Mar Thet "The Impacts of Trade and Exchange Rate Stability on Foreign Dire ct Investment: Case Study of ASEAN and Myanmar"
Presented to KEA-APEA International Conference held by Korea University, Seoul, Korea In July 14 -15, 2017.

2. Khin Mar Thet "The Effects of Trade Openness and Exchange Rate Volatility on Foreign Direct Investment of ASEAN and Myanmar"
Presented to the 16th International Conference of the Japan Economic Policy Association held by the University of Ryukyu Okinawa Nov 4-5, 2017.

Journal Submission for publication

1.Khin Mar Thet: "Evolution of Myanmar Trade Structure and Foreign Direct Investment" Journal of Humanities and Social Sciences, The Graduate School of Humanities and Social Science, Okayama University (Submitted).

2. Khin Mar Thet: "The Influential Determinants of FDI Inflow in Myanmar" submitted to Yangon University of Economics Research Journal, Yangon University of Economics, Accepted (27.11.2018)