

An Industrial Policy under East Asian Economic Integration:
Policy Implications for Myanmar

by

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Table of Contents

Acknowledgments	ii
Abbreviations	viii
List of Tables	xi
List of Figures	xiii
Chapter 1: Introduction	1
1.1 Background of the Study	1
1.2 Objectives of the Study	6
1.3 Hypothesis and Research Questions	9
1.4 Research Methodology	12
1.5 Organizational Structure	13
Chapter 2: The Economic Integration of Myanmar and its Industrialization Process in ASEAN	16
2.1 Background of the Economic Integration of Myanmar in ASEAN	16
2.1.1 The Main Reason for Myanmar to Join ASEAN.....	17
2.1.2 Myanmar's Trade Relationship with ASEAN before Membership.....	18
2.1.3 Myanmar's Trade Relationship with ASEAN after Membership	21
2.1.4 Myanmar's Trade Relationship with ASEAN Plus China, Korea, and Japan ..	22
2.1.5 Conclusion	23
2.2 The Trade Development of Myanmar within Regional Economic Integrations	23
2.2.1 Selected Key Economic Indicators for Myanmar	24
2.2.2 Commodity and Country Composition of Myanmar's Exports.....	26
2.2.3 Commodity and Country Composition of Myanmar's Imports.....	28
2.2.4 Industrial Development in Myanmar	29
2.3 Conclusion	31
Chapter 3: An Analysis of Myanmar's Economy Using Revealed Comparative Advantage (RCA)	33
3.1 Research Objectives and Questions	33
3.2 Overview of the Revealed Comparative Advantage (RCA)	34
3.3 Research Methodology	36
3.3.1 Measuring Comparative Advantage	36
3.3.2 The Variation of RCA Values	38
3.4 Results and Findings	39
3.4.1 The Variation Rate of Myanmar's RCA Value Exports to the World	

and ASEAN	43
3.4.2 Analysis of the Correlation Coefficient of CLMV at the Global Level	48
3.4.3 Analysis of the Correlation Coefficient of RCA between Myanmar and ASEAN-6.....	52
3.5 Conclusion	52
Chapter 4: A Comparative Assessment of Industrial Policies under East Asian	
Economic Integration	58
4.1 Introduction.....	58
4.2 Industrial Promotion Policies under Regional Trade Arrangements.....	59
4.3 A Comparative Study of Industrial Policies among Cambodia, Vietnam, Malaysia, and Myanmar	62
4.3.1 The Myanmar Experience.....	62
4.3.2 The Cambodian Experience.....	64
4.3.3 The Vietnamese Experience	65
4.3.4 The Malaysian Experience.....	67
4.3.5 Summary of the Comparative Study of Industrial Policies	68
4.4 Research Methodology and Framework.....	70
4.4.1 Global Trade Analysis Project (GTAP) Version 9 Database	70
4.4.2 Basic Structure of the Model and Assumptions.....	72
4.4.3 Policy Simulation Scenarios	76
4.4.4 Simulating the Impact of Regional Trade Agreements	76
4.4.5 Simulating Impacts of Preferential Treatments and Industrial Promotion for Myanmar	76
4.4.6 Simulating Impacts of Combined Trade and FDI Policies (East Asian Growth Model).....	78
4.5 Results and Findings.....	80
4.5.1 Welfare Implications for Myanmar under Regional Trade Agreements	81
4.5.2 Myanmar's Trade Volume under Regional Trade Agreements (RTAs)	82
4.5.3 Macroeconomic Impacts on Myanmar	84
4.5.4 Impact on Myanmar's Industrial Output	87
4.6 Conclusion and Policy Implications	91
Appendix-4-1	93
Chapter 5: Reforms, Strategies, and Changing Industrial Structure of Myanmar since	
2011	94
5.1 The Myanmar Reform under the Thein Sein Regime since 2011	94
5.1.1 The Framework for Economic and Social Reforms (FESR)	96

5.1.2	The Background of Myanmar Industrialization Vision	99
5.1.3	The Current Economy of Myanmar and its Industrial Promotion Policy	101
5.1.4	The Export Performance of Myanmar during 2001 to 2014	102
5.2	Myanmar’s National Export Strategies (NES) under the Thein Sein Regime	106
5.2.1	Objectives of Myanmar National Export Strategy	107
5.2.2	Agriculture	108
5.2.3	The Agriculture Policy of Myanmar	109
5.2.4	The Role of Agriculture and its Growth Strategy under the Thein Sein Regime	110
5.3	Trade, Foreign Investments, and Special Economic Zones	111
5.3.1	Trade	112
5.3.2	Foreign Direct Investments (FDIs) in Myanmar	115
5.3.3	The Special Economic Zones	117
5.4	Conclusion	119
	Appendix 5.1	123
Chapter 6: Conclusion, Findings, and Policy Recommendations		124
6.1	Synthesis of the Study	124
6.2	Main Findings and Policy Recommendations	124
6.2.1	Chapter 2	125
6.2.2	Chapter 3	126
6.2.3	Chapter 4	130
6.2.4	Chapter 5	133
6.3	Additional Policy Recommendations	135
6.4	Limitations of the Study	136
6.5	Possible Future Research for Myanmar	136
References		138

Abbreviations

ADB	Asian Development Bank
AEC	ASEAN Economic Community
AFTA	ASEAN Free Trade Agreement
ANIEs	Asian Newly Industrializing Countries
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
ASEAN-6	Indonesia, Malaysia, Philippines, Thailand, Singapore, and Brunei
ASEAN-4	Cambodia, Laos, Myanmar, and Vietnam
BIMSTEC	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
BMZ	Germany's Federal Ministry for Economic Cooperation and Development
CBM	Central Bank of Myanmar
CEPT	Common Effective Preferential Tariff Scheme
CGE	Computable General Equilibrium
CLM	Cambodia, Laos, and Myanmar
CLMV	Cambodia, Lao, Myanmar, and Vietnam
CLV	Cambodia, Lao, and Vietnam
CMV	Cambodia, Myanmar, and Vietnam
CSO	Central Statistical Organization
DICA	Directorate of Investment and Company Administration
EAFTA	East Asian Free Trade Area
EU	European Union

EPZ	Export Processing Zone
EV	Equivalent Variation
FDI	Foreign Direct Investment
FESR	Framework for Economic and Social Reforms
FTA	Free Trade Area
FY	Fiscal Year
GDP	Gross Domestic Product
GIZ	German Agency for International Cooperation
GMS	Greater Mekong Sub-region
GTAP	Global Trade Analysis Project
HRD	Human Resource Development
HS	Harmonized System
IMF	International Monetary Fund
ITC	International Trade Centre
IS	Import Substitution
JICA	Japan International Cooperation Agency
LDCs	Least Development Countries
MCDV	Myanmar Comprehensive Development Vision
MFA	Multi-Fiber Agreement
MIDC	Myanmar Industrial Development Committee
MNPED	Ministry of National Planning & Economic Development
MOC	Ministry of Commerce
NAFTA	North American Free Trade Agreement
NCDP	National Comprehensive Development Plan
NEDP	National Economic Development Planning

NEP	National Economic Policy
NES	National Export Strategy
NLM	New Light of Myanmar
ODA	Official Development Assistance
RCA	Revealed Comparative Advantage
ROW	Rest of World
SEZ	Special Economic Zone
SITC	Standard International Trade Classification
SLORC	State Law and Order Restoration Council
SME	Small and Medium-sized Enterprises
SOE	State Owned Enterprises
SPDC	State Peace and Development Council
TSEZMC	Thilawa SEZ Management Committee
UL	Unilateral Liberalization
USA	United States of America
WTO	World Trade Organization

List of Tables

Table 2-1 Commodity Composition of the Myanmar Export (% share of total).....	26
Table 2-2 Country Composition of Myanmar's Exports (% share of total)	27
Table 2-3 Country Composition of Myanmar Import (% share or total).....	28
Table 3-1 The Changing Top Ten-Export Pattern of Myanmar (2001-2012)	40
Table 3-2 Myanmar's RCA and its Variation Rate at the Global Level (2001-2012).....	43
Table 3-3 The Variation Rate of Myanmar RCA Value Exports to ASEAN	45
Table 3-4 Myanmar vs. Cambodia, Laos, and Vietnam at the Global Level	48
Table 3-5 Myanmar vs. Cambodia, Laos, and Vietnam at the ASEAN Level	48
Table 3-6 RCA's Correlation Coefficient of Myanmar and the CLV at the Global Level and ASEAN level (2001-03 versus 2010-12).....	51
Table 3-7 RCA's Correlation Coefficients of Myanmar vs. ASEAN-6 at the Global Level ...	52
Table 4-1 The Myanmar Industrial Share in GDP (1995-2014) (Share in %).....	62
Table 4-2 Summary of Industrial Policies among Cambodia, Vietnam, Malaysia, and Myanmar	69
Table 4-3 Aggregated Region in the GTAP Model	71
Table 4-4 Sector Aggregation	72
Table 4-5 Simulation Design for Myanmar under the RTAs and Industrial Promotion Policies	79
Table 4-6 Welfare Implication for Myanmar under Regional Trade Agreements	81
Table 4-7 Myanmar's Trade Volume with East Asian Members and Prospective Future Members (In Millions of US dollars)	83
Table 4-8 Macroeconomic Impact on Myanmar	85
Table 4-9 Impact on the Industrial Output of Myanmar under RTAs, Preferential Treatments, and Combined Trade and FDI Policies (Change in %)	88

Table 4-10 Capital Endowment using in the Industries of Myanmar	90
Table 5-1 The Top Ten Exported Products, 2002-04 and 2012-14 Averages (In Million US \$)	103
Table 5-2 The Top Ten Export Destinations for Myanmar, 2001-2015 (In US \$).....	104
Table 5-3 Myanmar Top Ten Export Items in 2010-2014 (Share in %)	105

List of Figures

Figure 1-1 The Structure of the Dissertation	15
Figure 4-1 Production Structure of the GTAP Model	73
Figure 5-1 Myanmar's Planning Process.....	98
Figure 5-2 Lists of Top Ten Products Exported by Myanmar (%).....	113
Figure 5-3 The Trade Direction of Myanmar in 2014 (% share).....	114
Figure 5-4 FDI's Inflow in Myanmar by Country as of 30.9.2015.....	115
Figure 5-5 FDI's Flow into Myanmar by Sectors	116

Chapter 1: Introduction

1.1 Background of the Study

Myanmar is situated in mainland Southeast Asia, with a total land area of 676,577 sq. km (261,228 sq. miles). The neighboring countries are China, Laos, Thailand, India, and Bangladesh. It is also the largest country in mainland Southeast Asia and is rich in natural resources. The total population of Myanmar was 58 million in 2013. There are eight major ethnic groups, which divide into a total of 135 tribes, making Myanmar a multi-ethnic, multicultural country (Hlaing, Taylor, and Than 2005, 1-2, DICA 2013, 9).

Myanmar won independence from Great Britain in 1948. After gaining its independence, Myanmar adopted a market economy and was one of the world exporters of rice as well as natural resource exports such as teak, oil, mineral, fish, and so on. Due to its unpleasant experiences under colonial rule, Myanmar was isolated from the world economy. As a result, Myanmar adopted a closed-door economic system until 1987. In 1987, Myanmar faced an economic crisis along with political disintegration. At the end of 1988, the socialist system collapsed, and the State Peace and Development Council (SPDC) regime came to power (Thein 2004, 6).

Under the SPDC regime, as globalization had been accelerating in the 1980s, many countries changed their policies, and Myanmar also tried to participate in the global economy. Myanmar started to open its market to the world in 1988. After the 1980s, as regional integration processes have had influence everywhere, Myanmar also entered into economic arrangements. Since the 1990s, Myanmar has introduced a market-oriented economic system. To attract Foreign Direct Investment (FDI), Myanmar liberalized its domestic and external trade, inviting foreign investors and promulgating economic policies and reforms. In 1992,

Myanmar joined regional organizations like the Greater Mekong Sub-region (GMS). After that, Myanmar also extended its participation in the Association of Southeast Asian Nations (ASEAN) and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) in 1997 (BIMSTEC 2010).

In the 1980s, regional economic integration groups rapidly emerged all over the world. Many countries that were under closed-door economies began to open up their markets to the world. The ASEAN is one of the active regional integration groups. Under this circumstance, many countries realize that without participation in the global economy they will lose their shares in the global market. Hence, many countries participate in the regional integration processes elsewhere. Besides, the growth of regional trading arrangements such as the North American Free Trade Agreement (NAFTA) and the European Union (EU) were the main reason for many countries to join regional integration groups (Fort and Webber 2008, 20).

Also, the growth of regional organizations like the NAFTA, EU groups, and the accession of China to World Trade Organization (WTO) in 2001 were the main engines of growing regionalism in Asia. As a result, free trade agreements became the main drivers in the process of economic globalization (Otsubo and Umemura 2003, 126-149). Given that, the economic integration has made many Asian countries closer to each other. Among regional trading groups, East Asia has been growing intra-regional trade and encouraging more cooperation in regional trade agreements for the long term (Otsubo and Umemura 1998, 4-5, Ezaki and Nguyen 2008, 2).

As regional integration processes have gained momentum, the ASEAN¹ has also come to be a regional group. Under these circumstances, ASEAN was formed in 1967 by Indonesia, Malaysia, the Philippines, Thailand, and Singapore. Brunei joined in 1984, Vietnam in 1995, Laos and Myanmar in 1997, and Cambodia in 1999. Therefore, ASEAN is now composed of ten member countries. Despite the formation of ASEAN in 1967, the cooperation and integration processes are still some levels below regional groups such as the EU and NAFTA. Until 1992, the regional integration process of ASEAN was particularly focused on political affairs rather than the economic integration process. Hence, the ASEAN leaders have decided to create more and deeper cooperation on economic and social issues such as goods, services, industry, infrastructure, finance, information technology, tourism, food, agriculture, forestry and so on (ASEAN 2002).

ASEAN leaders signed an agreement in 1992 to implement the ASEAN Economic Cooperation (AEC), and implemented the ASEAN Free Trade Area (AFTA) in 1993. The Agreement was a process aimed at reducing the tariff rate to the 0-5 percent level by 2002 for ASEAN-6 (i.e., Indonesia, Malaysia, Philippines, Thailand, Singapore, and Brunei) and by 2010 for ASEAN-4 (i.e., Cambodia, Laos, Myanmar, and Vietnam). Now the timing for the reduction of the tariff to 0-5 percent by ASEAN members has come into reality. ASEAN members also agreed to reduce the tariff rate to zero by 2010 for ASEAN-6 and by 2015 for

¹ The ASEAN members, which include 10 countries in Southeast Asia, are Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. ASEAN economies differ widely in their level of economic development and country size. In many studies, Cambodia, Laos PDR, Myanmar, and Vietnam are grouped as ASEAN-4 or the CLMV countries due to their lower economic development.

ASEAN-4. The targeted plan for ASEAN-6 has already accomplished, and the new members have recently implemented the target of zero-level tariffs in 2015 (ASEAN 2002).

Moreover, ASEAN cooperation has also been extending to outside of the region. The other regional organizations that have close links with ASEAN are the Asia-Pacific Economic Cooperation (APEC), the Asian-Europe Meeting (ASEM), and the ASEAN Plus Three, i.e., the ASEAN Plus China, Japan, and South Korea. Since 2001, ASEAN has not only been in cooperation in the economic area but also in areas such as services, industry, infrastructure, finance, information technology, tourism, Mekong Basin Development, food, agriculture, forestry, and so on. Based on this cooperation, the ASEAN Vision 2020 was adopted and launched. Since 1992, ASEAN has been trying to cooperate not only within, but also outside of its regions. Therefore, besides the AFTA, ASEAN members have developed free trade areas outside the region such as ASEAN Plus Three (China, Japan, and Korea), ASEAN-India, Australia and, New Zealand Free Trade Area, and bilateral agreements with other outside regions. China was the first country to initiate a FTA with ASEAN in 2005, followed by Korea (2007), Japan (2008), Australia and New Zealand (2010), and India (2010). Therefore, the emergence of ASEAN makes it the integration hub for FTAs in East Asia (Kawai and Wignaraja 2008, 4, CARIS 2011, 24).

With the acceleration of the regional integration process, Myanmar has been engaging its natural resource sectors as the main area of foreign direct investments. Since the exports of Myanmar have mainly consisted of natural resources, the pace of development of other industrial sectors was behind that of other countries in the region. Exports have been mainly from sectors such as agriculture, fishery, forestry, mining, and energy. For example, the export of electric power increased significantly under the SPDC regime. Domestic industries, however, faced insufficient electric power supplies for their industrial development. Although

the export of these products is required, on the other hand, it hinders other domestic industrial development, and it may also make the government put less focus on other non-natural resources sectors for industrial development. As a result, Myanmar's current economy lags behind in comparison with other neighboring countries.

Another problem faced by Myanmar is a failure to create facilitated procedures and well-organized systems. For instance, the unrecorded border trade problem that has existed since the socialist era in the 1960s and the misreported data on trade under the SPDC regime were the main problems for the economic development of Myanmar. In the socialist era, more than 85 percent of GDP was from border trade transactions. Under the SPDC regime, most of earning from the production of natural gas was unreported in the national accounts using a market exchange rate. There is no time-series analysis of unofficial trade statistics, but if it could be accounted for, the unrecorded market and misreported data would be about 50 to 80 percent of official trade records (Thein 2004, 80, Jalal 2008, 978). Therefore, the government still has a problem to record its volume of trade under the Thein Sein regime systematically. With the increase of economic interaction with neighboring countries, Myanmar also needs to deal with this problem to gain the most benefits from its integration processes effectively.

The related problem faced by Myanmar's economy is the multiple foreign exchange rate system that prevailed in the socialist era. Since parallel exchange rates have existed in the foreign exchange transaction, it has distorted the price and market. Finally, it had an adverse impact on export and hindered the economy. As the official rate was pegged at six kyats per US dollar, the kyat had been overvalued for more than 30 years. While many countries have had their currency depreciated, Myanmar kept the rate of six kyats per US dollar until 2012. Since the official rate and the market exchange was quite wide, it has distorted the incentive for

export because most transaction payments were set at the official rate (Tin 2004, 60, Fujita, Mieno, and Okamoto 2009, 106).

Under these circumstances, the US started a sanction in 1989 by suspending the preferential treatment and more sanctions of a trade embargo that banning all the import of textile and apparel imports from Myanmar in 2000 (Martin 2012, 16-17). Due to the lack of freedom and Democracy against people in Myanmar, the US banned the importation of Myanmar's exports to the US market. The US government also prohibited the FDI flow, especially financial service and loans into Myanmar. Although the sanction was targeted to the military government, the people of Myanmar suffered from the US and EU foreign policies. Economic sanctions were deprived the people of Myanmar, especially destroyed the garment export to the US and EU that boomed in the 1990s. This sanction closed the market for those goods and forced thousands of people out of work. It also created trade diversion and imposed costs and welfare loses for the Myanmar economy. If this experience was not happened in Myanmar, the garment export could lead the industrialization process of Myanmar in this period. As a result, the closed relationship between Myanmar and China was caused by the impact of sanction and China became the major political supporter of Myanmar regime (Rarick 2006, 61-63).

1.2 Objectives of the Study

With regard to the problems mentioned above, I intend to focus the study on various objectives and research methodologies in order to design an industrial promotion policy for Myanmar within the framework of the current strategy and reforms.

The general objective of the study is to explore the change in export competitiveness and comparative advantage of Myanmar with the ASEAN latecomers in regional economic integrations. The study then employs a comparative study of industrial promotion policies

selected from the leading ASEAN member, Malaysia, while examining the ASEAN latecomers, Cambodia, Vietnam, and Myanmar, to compare their economic development since adopting market-oriented economies at the same time in the 1980s.

First, this research aims to present the recent trade pattern of Myanmar in ASEAN to compare it with the trade potential of the Cambodia, Laos, Myanmar, and Vietnam (CLMV) through the Revealed Comparative Advantage (RCA) index. To understand the export structure of ASEAN members, this study uses the Harmonized System (HS) code, two-digit industries, as the basic tool for analyzing their export structures and their variations of RCA by observing the strengths and weaknesses of their industrial exports. Also, to understand the change in their export competitiveness, the study uses the RCA correlation coefficients of cross-commodity and country. Finally, the change in industrial export structure and the development of export patterns are also explored by using the RCA correlation coefficients of each country. Here, the study identifies the relative lack of evolution in industrial/export structures in Myanmar, relative to that of other latecomers to the ASEAN community, due to the trade embargo imposed by the US during 2000 to 2015.

Second, this research explores the industrial policy of Myanmar comparing to selected ASEAN members for their efforts to promote industries during the 1980s to 2000s. This research reviews a comparative study of industrial promotion policies of selected ASEAN members. Then, the study draws industrial policy simulations for Myanmar using the computable general equilibrium model. To analyze the impact of Regional Trade Agreements (RTAs) on Myanmar, the Global Trade Analysis Project (GTAP) model developed by Hertel (1997) is used as a policy simulation tool to analyze welfare impacts on the Myanmar economy. Furthermore, the impact of RTAs on macroeconomics, export and import bundles, and the industrial output of Myanmar are elaborated. The primary objective of the study is to formulate

industrial policies for Myanmar by reviewing the comparative industrial policies adopted by the selected ASEAN members. In this study, Malaysia presents a leading ASEAN member, while Cambodia, Vietnam, and Myanmar are treated as the latecomers in the RTA schemes. To understand industrial policies adopted by these selected ASEAN members, the study discusses a policy concerned with government intervention, FDI attraction for industry and policy design, and other combinations of various industrial policies.

The period of study starts from the 1980s when the SPDC government came into power under the name of the State Law and Order Restoration Council (SLORC), introduced a market economy, and attempted to participate in regional organizations. The main focus is on Myanmar's attempts to initiate a market-economy, especially in trade, FDI, and industrial promotions in the context of East Asian economic integration.

In summary, the primary objectives of the study are:

1. To identify the evolution/changes in export competitiveness and comparative advantage of Myanmar
2. To identify policy initiatives to promote Myanmar industries and to enable it to catch up with the ASEAN members in regional economic integration by drawing experiences from the selected ASEAN members
3. To analyze relative effectiveness of trade and FDI policies and to seek an optimal mix in promoting Myanmar's industrial development
4. To study the impact on the Myanmar economy under various trade integration schemes including the narrower AFTA and the wider East Asian economic integration frameworks and to assess the role of FDI and technology transfer in conjunction with the aforementioned trade liberalization

5. To provide policy recommendations in designing related system and institutions in order to attract FDIs into Myanmar.

From the research objectives, the study attempts to investigate the impact of East Asian economic integration on Myanmar and aims to present the recent economic integration of Myanmar in East Asia and to investigate the trade potential of Myanmar with various agreements under the EAFTA schemes. To understand the perspective of Myanmar, this research then reviews the role of foreign trade, FDIs, and technology transfers into Myanmar, particularly the current economic cooperation of the country in East Asia.

1.3 Hypothesis and Research Questions

The followings hypothesis and research questions will be examined in this study.

Hypothesis 1: The first hypothesis presumes that Myanmar needs to prepare well its export pattern for the ASEAN market.

With the regional integration, participating in the ASEAN economic integration can affect the export pattern of Myanmar. Hence, Myanmar needs to design an export pattern to enhance its market to compete with the ASEAN latecomers (CLV) and the advanced ASEAN members. In order to prove Hypothesis 1, the first research question will raise as; how regional economic integration with ASEAN and its neighboring countries affect the export pattern of Myanmar's economy, and, how Myanmar can enhance its market to compete with the ASEAN latecomers (CLV) and the advanced ASEAN members in the future.

Hypothesis 2: Myanmar gains benefits from joining the ASEAN FTA, as Myanmar can enhance its export to the ASEAN market.

By joining the AFTA, it will create a benefit for Myanmar's exports to the ASEAN region. In order to benefit from the ASEAN FTA, how and what could do to promote its industrial policies under regional trade integrations must be understood. Subsequently, the

second research question is; how Myanmar can promote its industrialization with the ASEAN FTA scheme.

Hypothesis 3: The leading ASEAN members should create a favorable policy for the latecomers to upgrade their industrial structures within the regional framework.

Since the development gap between the leading ASEAN members and latecomers is enormous, the gap should be narrowed within the regional context. Therefore, the leading ASEAN members need to offer a favorable policy for ASEAN latecomers. Then the latecomers may be able catch up the leading members as the ASEAN norms and enhance their industrial structures in the regional context. Therefore, the research question is; what kind of protection is needed among ASEAN members and the CLMV in order to narrow the development gap.

Hypothesis 4: Joining the FTA will have a negative and positive impact on the economies of ASEAN latecomers.

The regional trade agreements will create positive and negative effects on welfare changes and terms of trade. Therefore, the research questions will answer as what the impacts are on ASEAN latecomer like Myanmar;

- a) by joining the AFTA under the regional economic integration of ASEAN
- b) by joining the free trade agreement under the EAFTA Schemes and relative effectiveness of trade and FDI policies, and
- c) under the narrower AFTA and the wider East Asian economic integration frameworks and the role of FDI and technology transfer in conjunction with the aforementioned trade liberalization.

Hypothesis 5: Myanmar needs to upgrade its agribusiness to more sophisticated agro-based industries and create labor-intensive manufacturing industries with employment growth for local people.

As the current export pattern of Myanmar has mainly relied on resource-based industry, a structural change is needed for Myanmar to develop its manufacturing industry. Therefore, upgrading from agribusiness to agro-based industry and more capital-intensive industries will benefit Myanmar's exports in the global market. Afterward, upgrading a comparatively advantaged industry and current labor-intensive manufacturing industries like textiles and improving agro-based industries for long-term development will help Myanmar to achieve rapid industrialization. Based on this hypothesis, the last question is what the determinant factors are that Myanmar has to change, in order to facilitate rapid industrialization and support industrial development in the future.

Therefore, the research will attempt to address the following questions:

- 1) How can regional economic integration in ASEAN and with its neighboring countries affect the export pattern of Myanmar's economy, and how can Myanmar enhance its market to compete with the ASEAN latecomers (CLV) and the advanced ASEAN members in the future?
- 2) How can Myanmar promote its industrial policies within the ASEAN Free Trade Area (AFTA)?
- 3) What kind of policy is needed among the elder ASEAN members and the CLMV to narrow the development gap?
- 4) What are the impacts on the Myanmar economy?
 - a) of joining the ASEAN Free Trade Area (AFTA)?
 - b) of joining the free trade agreement under the EAFTA Schemes?
 - c) of relative effectiveness of trade and FDI policies, and joining the narrower AFTA and the wider East Asian economic integration frameworks and the role of FDIs and technology transfer in conjunction with the aforementioned trade liberalization?

- 5) What are the potential strategies that can lead to rapid industrialization and support economic development of Myanmar in the future?

Based on the research objectives and questions, the dissertation will attempt to answer each question chapter by chapter.

1.4 Research Methodology

The study examines the comparative advantage and competitiveness of Myanmar with the ASEAN latecomers (CLV) in the ASEAN and global context. Furthermore, based on the results of Myanmar's RCA on its industrial structure, the study formulates industrial policies for Myanmar with a comparative study selected from among the ASEAN members. The industrial promotion policy for Myanmar will be drawn from a comparative study. This policy is formulated through various simulations, using especially regional trade agreements, movement of capitals (a stock effect), and technology transfers (technology effects) into Myanmar using the Global Trade Analysis Project (GTAP) model. Moreover, to implement the potential industrial strategies for Myanmar, the study examines the economic development of Myanmar and the reforms, strategies, and industrial structures since 2011.

By using the RCA and the GTAP model, the study incorporates a model dealing with the economic development of the leading ASEAN members. The GTAP model is primarily utilized in this study to examine the impact of FTA on Myanmar by observing macroeconomics, welfare impacts, trade patterns, and industrial structures. In the general equilibrium model, the latest GTAP, version 9, is used as a tool to examine welfare impacts on Myanmar in regional trade agreements. In the GTAP model, the study focuses on the Myanmar economy by using the standard GTAP model. Firstly, the design of experiments is to examine the consequence of free trade agreements under regional trading arrangement frameworks. To understand the dynamic impacts, the study uses exogenous variables such as capital movements and

technology transfers to apply to Myanmar's industries. This study is an attempt to identify the impact of several free trade agreements, especially the AFTA, EAFTA, and ASEAN Plus One with China, Japan, and Korea.

In undertaking this research, both primary and secondary sources are utilized. The main primary sources come from international organizations such as the Global Trade Analysis Project (GTAP), the International Trade Centre (ITC), the Asian Development Bank (ADB), and the ASEAN secretariats. Moreover, the primary sources also consist of my own field survey on Myanmar's industrial policies, field studies from various ministries in Myanmar, government-published books, government-released documents, periodicals, and policy surveys from government ministerial offices. Secondary sources encompass journals, articles, case studies, critiques by eminent scholars, and internet-based information, among others.

1.5 Organizational Structure

The structure of this dissertation is presented in Figure 1-1.

Chapter 1 is the introductory chapter. It presents the background of the study, the problem statement, research objectives, hypothesis, methodology, and the structure of the dissertation.

Chapter 2 reviews the historical background of Myanmar in ASEAN. Then it presents Myanmar's trade relationship with the ASEAN and East Asian nations. It discusses the background of Myanmar economy, its industrialization process, economic performances, and the Foreign Direct Investment (FDI) trend in Myanmar. It also provides an overview of the trade and industrial development, the commodity and country composition, export and import bundles, and the trend of major sectors and industrial development in Myanmar.

Chapter 3 examines the strength and weakness of Myanmar's RCA within the ASEAN and broader global economy. It focuses on the comparative advantage of Myanmar, the

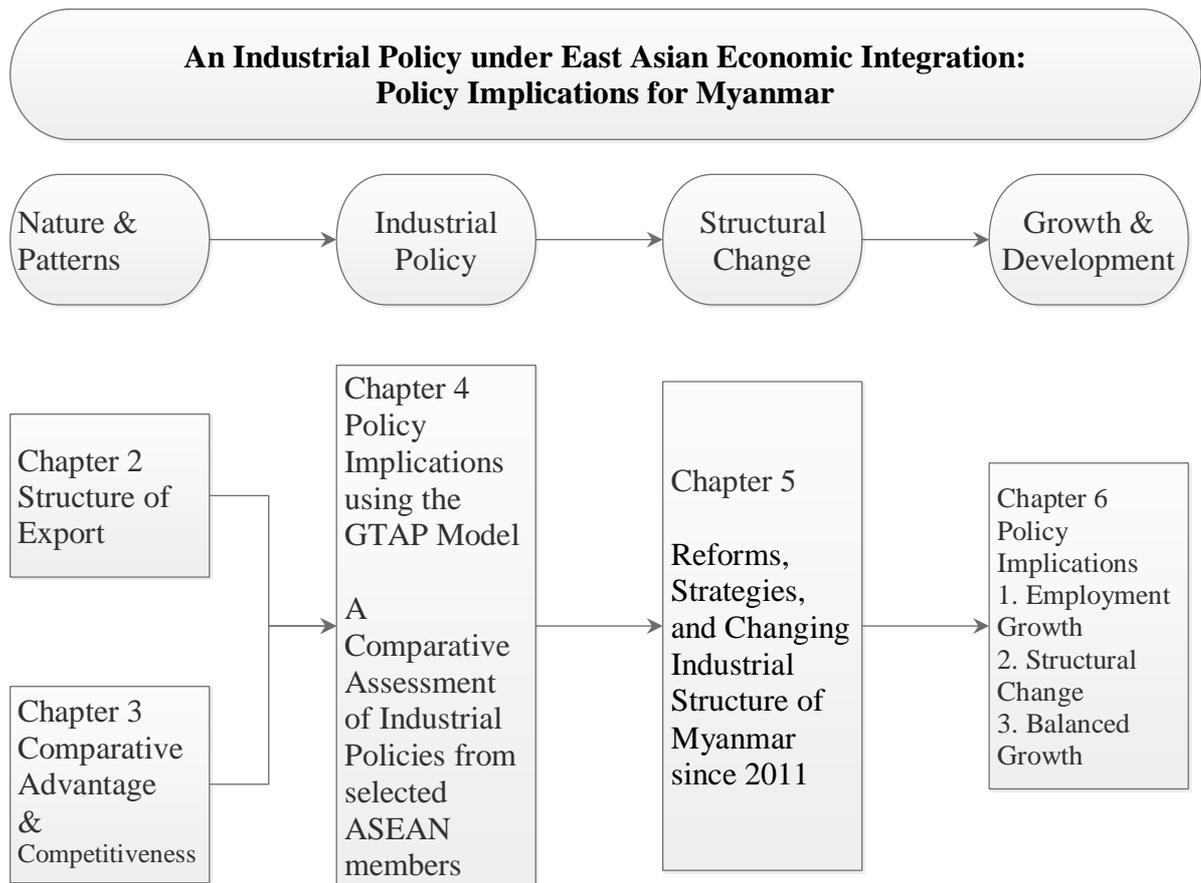
comparative advantage of CLMV, and the variation of RCA values of Myanmar at the global and ASEAN levels. It also analyses the variation rate of RCA value of Myanmar's export to the world and the ASEAN. Finally, it concludes with an analysis of the correlation coefficient of RCA, the correlation coefficient of the CLMV exports to the global market, and the correlation coefficient of RCA between Myanmar and ASEAN-6.

In Chapter 4, the study scrutinizes an industrial policy for Myanmar using the comparative study of industrial promotion policy with selected ASEAN members. The study applies the GTAP model to draw an industrial policy for Myanmar by reviewing regional trade agreements and their impacts on Myanmar's economy. It applies various policy simulations to regional free trade agreements under the narrower groups and the wider groups. In the policy simulations, Myanmar participation in regional trade agreements such as the ASEAN FTA, East Asian FTA (ASEAN Plus Three), and ASEAN Plus One with China, Korea, and Japan are presented. Hence, the study examines under the narrower AFTA and the wider East Asian economic integration frameworks, and the role of FDIs and technology transfer in conjunction with the aforementioned trade liberalization. The impact of FTAs on Myanmar is examined through welfare level, GDP, export and import bundles, terms of trade, and industrial output.

In Chapter 5, the study reviews the current reforms and economic strategies of Myanmar under the Thein Sein regime since 2011. It presents the objectives of Myanmar's National Export Strategy, the role of agriculture and its growth strategy, the role of foreign trade, and Myanmar's industrial vision and strategy. This chapter investigates the potential of the industrial structures, trade, FDI trends, and the Special Economic Zones (SEZs), after the lifting of US and EU sanctions.

Lastly, Chapter 6 concludes with findings, policy recommendations, the limitations of the study, and the potential future work for Myanmar. The following Figure 1-1 shows the structure of the dissertation.

Figure 1-1 The Structure of the Dissertation



Source: Author

Chapter 2: The Economic Integration of Myanmar and its Industrialization Process in ASEAN

2.1 Background of the Economic Integration of Myanmar in ASEAN

Soon after the State Peace and Development Council (SPDC) came to power, the government started to liberalize the economy and adopted a market-based approach in 1988. Several reforms were implemented in order for private and foreign firms to participate in the open economy. An economy that had been long isolated from the world was opened to regional and international economies. The opening economy was changed so that not only domestic but also for foreign firms would be allowed to invest in Myanmar.

In the 1980s, the changing events in the global economy, such as the economic reforms in China, the collapse of the Soviet Union and the transformation of its market system, and the success of the Newly Industrialized Countries (NICs) influenced the government of Myanmar to prioritize economic transition. The regime also realized that the planned economy neither generated growth nor sustained development at that time (Than 2005, 71). Therefore, adopting an open market economy like many countries in transition would help Myanmar to develop its economy in the future.

In 1989, the adoption of a market economy and liberalization of reforms made the growth rate increase year by year. Several reforms affected the economic performance of Myanmar. During the reform period, the main contribution to GDP was from the agricultural sector, especially resource-based commodity exports. After allowing domestic firms and liberalization of price control, the agricultural sector became the main engine of Myanmar's GDP at that time (Than 2005, 71). Due to the enactment of an FDI law in 1988, much FDI from ASEAN and outside regions began flowing into Myanmar alongside the liberalization of

trade and investments. Most of the FDI went into mineral extraction sectors, especially the production of oil and gas, despite agricultural sectors being the main contributors to GDP at that time. From 1999 to 2001, a boom in the garment sector attracted FDI into Myanmar. Following the garment sector, FDI flowed into oil and gas sectors, so these sectors became the main engines of Myanmar's GDP in 2003 (Than 2005, 74-76). The main trading partners of Myanmar were its neighboring countries, especially the ASEAN nations, along with Japan, China, Korea, Europe, and the US.

2.1.1 The Main Reason for Myanmar to Join ASEAN

When the ASEAN was formed, Myanmar decided not to join the regional group because it was a founding member of the Non-Aligned Movement at that time. Although the founders of ASEAN invited Myanmar to participate in the regional group, the government of Myanmar rejected it at that time. Throughout the first three decades of ASEAN, Myanmar acted as a neutral in international political issues (Myoe 2006, 6-9). However, after the 1988 democratic demonstration and change in government, Myanmar joined the ASEAN group in 1995 as an observer along with Laos and Cambodia. Finally, Myanmar became a full member of ASEAN in 1997.

There were two main reasons that made Myanmar join the ASEAN. First, there was external and internal changes in the country. The internal change was that the long-standing issue of armed conflict with indigenous groups was becoming resolved. Second, Myanmar's government realized that, in the era of regional integration, isolation was not possible, and it needed to find partners to be protected from external attacks (Than 2005, 84, Than and Gates 2001, 264). During the period of accession to become a member, Myanmar faced many attacks from outside and inside the region. The US and some Western countries were against Myanmar becoming a member. However, it was believed that joining ASEAN would be safe

for Myanmar, and it decided to join ASEAN in 1997. With the accession to ASEAN, the trade pattern and trade volume of Myanmar has been changed significantly. The following sections discuss the changes before and after Myanmar became a member of ASEAN.

2.1.2 Myanmar's Trade Relationship with ASEAN before Membership

Historically, Myanmar has had trade relationships with its neighboring countries. Myanmar exported rice to Malaya (including Singapore), the Philippines, and Indonesia (Sumatra and Java). During the colonial period, Myanmar's exports to Southeast Asian countries not only included rice but also other agricultural products such as beans and pulses, chilies, groundnut cakes, sesame cakes, oil seeds and other oil residues, and raw rubber. Myanmar's imports consisted of edible oils, gunny bags, coconuts, fibers, cotton and jute (Myint 2009, 30, Than 1992, 9). At that time, Myanmar exports were primary products. To run the economy, Myanmar then imported necessary machinery and other industrial parts. The country's main trading partners had been Asian countries throughout history. In the socialist era, due to restrictions on trade, there was illegal trade along the borders. However, it benefited only a few people who had a close links with the authorities. Due to the mismanagement of the socialist planned economy, the country was designated as one of the Least Developed Countries (LDCs) in 1987 (James 2005, 2). Economic downturn also sparked political demonstrations in 1988 and led to the downfall of the socialist government. The new government, under the name of the State Law and Order Restoration Council (SLORC), came to power and initiated the reform process.

Soon after Myanmar adopted a market economy in 1988, GDP growth began and has continued to increase to this day, but limited to structural changes. Due to the allowing of private firms to participate in the market with few restrictions, along with the inflow of foreign direct investment, the GDP has changed year by year (ADB 2010). In the centrally-planned

economy, the government controlled the export of rice for more than two decades. After the SPDC regime took power, most of the business sectors were liberalized and the private sector was allowed to participate in the economy. In 1988, the government promulgated an FDI law to attract foreign investors to Myanmar. Since then, trade in agricultural crops, fish, hardwood, medium and large industries, power generation, construction, and the mass media has allowed the private sector to participate in the economy (Kubo 2012, 4-5).

After several reforms had been implemented in areas such as foreign investments, the fiscal, financial, and legal systems, tourism, and trade, among others, the private sector in the economy increased during the mid-1980s to 1990s (Thein 2004, 125). Most of the private sector was concentrated in trade. Its contribution increased from 52.6 percent in 1986/87 to 75 percent in 1996/97. However, the government maintained some important sectors as the domain of the state sector. The exploration and production of gems, the oil, and gas sectors, and the financial sector were under the control of the government (Than 1992, 2).

After liberalization and implementation of economic reforms, Myanmar experienced economic growth, except for years when disasters and crises occurred. Though the Myanmar economy was changed under the reform processes, structural change remains to be realized. When compared with the transitional countries in Southeast Asia like Vietnam, Laos, and Cambodia, the share of manufacturing in GDP has not changed much yet. The GDP was dominated by the agricultural sector. Until 1997, the leading sector of the Myanmar economy was agricultural products, with 58.9 percent of GDP (Fujita, Mieno, and Okamoto 2009, 3-6).

Following agriculture, the trade and service sector was the second largest contributor to GDP in the early 1990s. With the liberalization on foreign investments, FDI rapidly flowed into Myanmar until 1996. Most foreign investors primarily engaged in non-manufacturing sectors, especially construction, hotels, and the tourism industry. During the boom of these

industries, the share of agriculture decreased in the mid-1990s. However, trade and service sectors were the most attractive sectors during the surge of FDI (Fujita, Mieno, and Okamoto 2009, 10).

Myanmar's trading partners have been its neighboring countries since the opening of its economy. The main trading partners have been Thailand, China, India, and Bangladesh due to their close proximity. The shares of trade for these four countries were 56 percent of the Myanmar's exports and 52.7 percent of imports. In the socialist era, the main trading partners were Japan and West Germany. Due to the political changes, Myanmar trading partners have been changing to its neighboring countries such as China and Thailand (Kudo 2007, 9-10). Finally, Hong Kong and South Korea also increased their share of FDI in Myanmar.

In 1989, mutual visits by the former head of state of Myanmar, Senior General Than Shwe, and the President of China, Jiang Zemin, a close link of economic cooperation between the two countries promised to increase. Since then, trade between the two countries has been accelerating and China has become Myanmar's largest trading partner. Most of Myanmar's imports from China have been light industrial products, machinery, electric appliances and textiles. Myanmar's exports have been mainly raw materials such as timber, ore, rubber, and so on. During the 1980s and 1990s, half of the Myanmar-China trade volume was through border trade (Xiaolin 2007, 56-57).

Since 1998, due to the liberalization of trade and investment, the registration of export and import companies increased from none in 1988 to 2,813 in 2001 and even further to 19,494 in 2005. During the 1990s and 2000s, Myanmar's top five principle exports were natural gas, timber products, beans and pulses, garments, and marine products. Natural gas became the largest part of the GDP and was mainly exported to Thailand and China. Myanmar's trade

partners were Thailand, China, India, Singapore, and Hong Kong at that time (Singh 2009, 244-248).

2.1.3 Myanmar's Trade Relationship with ASEAN after Membership

Since 1988, after abandoning the system of isolationism from the world, Myanmar liberalized its trade to allow private firms to engage in external trade and allowed foreign investments in Myanmar. During this time, most foreign direct investment was directed into natural resource-based industries. Among the manufacturing industries, only garment production received investment. The boom period of Myanmar's garment industry was during the 1990s to 2001. The share of the garment industry in Myanmar's exports increased from 2.25 percent in 1990 to 39.5 percent in 2000. Since then, the garment industry has become the largest manufacturing sector in Myanmar (Kudo 2009, 3).

The main direction of garment export went to the US and European markets. At the time, the US was the main market for Myanmar's garment exports, followed by the European market. However, due to political reasons, the boom in the garment sector ended in 2003 due to sanctions led by the US. After that, Myanmar's garment exports have been moving to Asian countries such as Japan and South Korea. Japan has become the main importer of Myanmar garments since the sanctions. The volume of exports to Japan was 420 millions US dollars in 2009 (ITC 2015). However, the export volume has not been growing as of the early 1990s (Kudo 2009, 4).

After becoming a member of ASEAN, trade relations with its members has been increasing year after year. Before accession to ASEAN, trade with Thailand and Vietnam was not impressive. The volume of trade with Thailand was increased from zero in 1997 to 4895 million US dollars in 2008. In the meantime, trade with Vietnam also increased from 3 million US dollars in 1997 to 104 million US dollars in 2008. Despite the accelerating growth of trade

between Myanmar and advanced members, trade with the less developed ASEAN members has not increased yet because the economic patterns and structures of these countries are similar, and as are their export patterns. Trade between Laos and Cambodia has been at quite low levels. Among ASEAN members, Thailand has been the main trade partner of Myanmar, followed by China, Singapore, India, Malaysia, and Indonesia. Trade between Myanmar and the ASEAN latecomers (Cambodia, Laos, and Vietnam) has been very low level recently (ADB 2013).

2.1.4 Myanmar's Trade Relationship with ASEAN Plus China, Korea, and Japan

In the ASEAN region, Myanmar's main trade partners have been countries such as Singapore, Thailand, Malaysia, and Indonesia. Singapore was the main trading partner starting from 165.45 million US dollars in 1990 to 984.77 million US dollars in 1996. Trade increased by six times by 1996. After adoption of a market-oriented economy in 1988, Myanmar has been eagerly importing products such as daily necessities, especially consumption goods, from advanced countries. Myanmar's trade relationship with Indonesia, Singapore, and Malaysia has been enhanced steadily since the liberalization of trade. As Myanmar is an agricultural country and mostly relies on the primary commodities, trade between countries at the same level, such as Cambodia, Laos, and Vietnam, has not been developed at the time. Trade between Myanmar and the CLV was almost zero. Besides ASEAN, East Asian countries such as Japan, South Korea, and China, and its neighboring countries were the main trading partners of Myanmar. Among the East Asian countries, China has been the largest trade partner of Myanmar. The share of China increased from 170 million US dollars in 1990 to 698 million US dollars in 1996 (ADB 2013).

2.1.5 Conclusion

During its isolation from the world in the socialist era, Myanmar's economy experienced sluggish growth. After facing severe depression and political instability, Myanmar decided to end its closed-door system. In 1988, Myanmar abandoned its long-term isolationism from the world. After the adoption of a market economy, Myanmar's economy grew year after year. Before membership in ASEAN, trade with Thailand was not as developed as in the current situation. Since membership, trade with Thailand has improved significantly. After handling internal affairs, such as signing peace agreements with armed groups, the border has become a place where goods, services, and labor flow to neighboring countries freely. This internal peace led Myanmar's trade with Thailand to accelerate on some levels. Besides that, trade with neighboring countries such as China, India, and Bangladesh has also been developed by joining sub-regional organizations like the GMS and BIMSTEC. In 1999, the effect of sanctions led the booming garment sector to slow down. Additionally, the extension of trade embargo affected the entire export market of Myanmar to the US and Europe from 2003. Since then, the export market of Myanmar has relied upon the ASEAN and Asian markets entirely. Despite trade with the advanced ASEAN members and Asian countries such as China, India, and Japan growing, more cooperation is still needed with the less developed members to promote trade among them. Despite the fact that trade between Myanmar and Vietnam has shown some progress recently, trade relations with the ASEAN latecomers such as Cambodia and Laos are still at a low level.

2.2 The Trade Development of Myanmar within Regional Economic Integrations

Since the adoption of a market-oriented economy, Myanmar started to trade with neighboring countries and Southeast Asian nations. In order to attract FDI, the government

removed price controls on agricultural commodities and promulgated several reforms in 1988. Under the Common Effective Preferential Tariff (CEPT) scheme implemented by the ASEAN Free Trade Area (AFTA), Myanmar has liberalized its trade to participate in the regional arrangement. According to the first track of the ASEAN FTA scheme, Myanmar needed to reduce its tariff rate to 0-5 percent in 2010. Additionally, Myanmar also reached a zero-tariff rate in 2015 with the new CLV members. According to the CEPT scheme, Myanmar has been gradually reducing its tariff rate under the CEPT scheme.

With the adoption of a market-oriented economy in 1988, Myanmar government has implemented reforms in many areas. Additionally, with the promulgation of a foreign investment law and the removal of restrictions on private sector participation in domestic and foreign trade, the participation of the private sector in the economy has been increasing after long restrictions on trade. This development led to real GDP growth of seven percent annually during the period 1992/93 to 1996/97. The main factor was the development of the agriculture sector at that time (Thein 2004, 6).

Since then, Myanmar's economy has been growing steadily, with an annual growth of GDP about ten percent from 2001 to 2009. Other economic indicators of GDP, such as GDP per capita, have performed as well. The major contributors to GDP have been agriculture, trade, transport, and communications.

2.2.1 Selected Key Economic Indicators for Myanmar

The GDP of Myanmar has shown a trend of increasing. Myanmar's annual GDP growth was two digits during the period 2001-2011. Myanmar's exports increased from 17,131 million Kyat in 2001 to 41,289 million Kyat in 2009 (CSO 2015). The exports of Myanmar have been concentrated in the resource-based sectors, especially agriculture, minerals, and forestry. Myanmar's trade showed a deficit until 2000. Due to the boom in garment and natural gas

exports, Myanmar's trade started showing a surplus from 2001 to now (ADB 2013). The manufacturing of textiles (garment exports) has been showing a decline since 2003. The main reason is the sanctions led by the US. Before the sanctions, garment export was the leading sector and the largest contributor to GDP. Besides, it also created many jobs for local people in the manufacturing industry (ADB 2013).

Because of the sanction affecting garments, the destination market for Myanmar shifted from the West to the Asian markets after the decline of garment exports. During the end of the 1990s and the early 2000s, Myanmar's garments were exported to the US and European market. Currently, Asian and ASEAN markets are the main export direction for Myanmar. The main export direction has been to Thailand, India, and China. The export shares of Myanmar to Thailand, India, and China in 2009 were 46 percent, 13 percent, and 9 percent respectively. The other exports have been going to Japan (5%), Malaysia (2%), Germany, the Republic of Korea, Singapore, Vietnam, and the United Kingdom (1%) (ADB 2013).

Myanmar has mainly imported goods from border trade transactions with China and Thailand due to their close border proximity. The share of China and Thailand of imports to Myanmar was 33 percent in 2001 and 26 percent in 2009. The other suppliers are Singapore (15%), Japan, Malaysia, the Republic of Korea, India (3% each) and Indonesia (2%). During the study period of 2001-2014, Myanmar's exports were dominated by mineral fuels, oils, agriculture, forestry, and fishery. These sectors have been an overwhelming 75 percent of Myanmar's exports. The share of mineral fuels and oil exports is the largest, with 50 percent. The other exports are wood products with 15 percent, agricultural products, and fish products with 15 percent each (ITC 2013).

2.2.2 Commodity and Country Composition of Myanmar's Exports

Table 2-1 shows the industrial structure of Myanmar using the Standard International Trade Classification (SITC) collected from the official government database.

Table 2-1 Commodity Composition of the Myanmar Export (% share of total)

SITC	Commodity Section	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
00	Food and live animals	32.01	28.44	23.31	25.82	18.43	18.6	18.49	18.26
01	Beverages and tobacco	0.28	0.88	0.70	1.13	1.16	1.47	0.97	0.62
02	Crude materials, inedible, except fuels	13.99	18.86	12.94	20.53	16.57	17.06	12.09	12.5
03	Mineral fuels, oils and lubricants	11.79	32.44	36.41	29.96	40.48	36.51	43.65	44.49
04	Animal and vegetable oils, fats, and waxes	_*	_*	_*	_*	_*	_*	0	0
05	Chemicals and related products	0.03	0.08	0.03	0.02	0.02	0.01	0.02	0.01
06	Manufactured goods	12.38	3.43	5.31	7.20	8.93	11.78	10.9	11.15
07	Machinery and transport equipment	0.28	0.14	0.07	0.10	0.08	0.08	0.04	0.02
08	Miscellaneous manufactured articles	15.68	0.79	0.54	0.90	0.73	0.64	0.31	0.21
09	Other Commodities and transactions	13.56	14.93	20.68	14.34	13.6	13.85	13.52	12.72

* Data are not available.

Source: Statistics Year Book (2008), Central Statistical Organization(CSO), Myanmar

During the study period, Myanmar has concentrated on primary sectors such as foods and live animals (00), crude material (02), some mineral fuels, oils, lubricants and related material (03), and a few manufactured goods (06) in the early of the 2000s. Since 2001, Myanmar's export composition has shifted to the exploration and extraction of mineral resources, such as natural gas. After that, the share of mineral fuels (03) increased from 11.79 percent in 2001/01 to 32.44 percent in 2002/03 and further increased to nearly half of GDP, 44.9 percent, in 2009. The composition of manufactured goods (06) did not change much during the 2000s. In the early 2000s, the share of manufactured goods was 12.28 percent. The manufacturing sector of Myanmar decreased due to the US sanctions, especially garment exports.

Since the main exports of Myanmar have been primary resources, the majority of commodities have been exported to neighboring countries such as Thailand, China, and India. The exporting of natural gas has mostly been to China and Thailand. After joining ASEAN, Myanmar's trade relationship between these countries has been accelerating.

Table 2-2 Country Composition of Myanmar's Exports (% share of total)

Importers	2001	2002	2003	2004	2005	2006	2007	2008	2009
Thailand	28.60	32.37	31.97	42.17	47.39	50.39	46.62	52.79	46.90
India	13.43	11.94	14.37	12.79	12.97	15.12	16.39	14.17	19.92
China	4.76	4.89	6.03	6.44	7.28	5.44	7.66	10.12	10.89
Japan	3.62	3.92	4.94	5.60	5.40	5.29	5.98	4.93	5.75
Malaysia	2.78	2.74	2.85	3.32	3.54	2.69	2.81	2.77	2.43
Singapore	4.02	3.82	2.98	2.21	2.86	1.50	1.24	1.39	1.99
Germany	3.92	2.89	3.71	4.05	2.99	2.76	2.53	1.60	1.37
Korea	1.80	2.01	1.04	0.94	1.49	2.08	1.63	1.82	1.32
Others	37.07	35.41	32.10	22.48	16.09	14.74	15.15	10.41	9.42

Source: Author's calculation based on the ITC database

Table 2-2 shows that, Myanmar's export volume to Thailand increased from 28.60 percent in 2001 to 47.02 percent in 2009. Before Myanmar was a member of ASEAN, trade between the two had not developed. Myanmar's main exports to Thailand are mineral fuels, oils, and wood products, which are 90 percent of Myanmar's exports to Thailand. The other exports are fish and wood products. Following Thailand, India and China are the main export markets for Myanmar. The export shares to these two countries were 19.98 percent and 10.92 percent in 2009. The export composition of Myanmar to China is wood, ores, slag and ash, pearls, precious stones, fish, mineral fuels, and oils. India is also primary export market for Myanmar's agricultural products and wood products. The other major export market is Japan, in which the main exports are garment products, footwear, and fish.

2.2.3 Commodity and Country Composition of Myanmar's Imports

Table 2-3 shows that the major suppliers of Myanmar were China, Thailand, and Singapore. Most of the imports from China consist of machinery, nuclear reactors, boilers, electrical goods, electronic equipment, vehicles, iron, and steel. Myanmar imports from Thailand, especially refinery fuels, oils, beverages, vehicles accessories, electrical goods, electronic equipment, pharmaceutical products, and essential oils. Myanmar also imports commodities from Singapore such as mineral fuels, oils, distillation products, machinery, electrical goods, and electronic equipment.

Table 2-3 Country Composition of Myanmar Import (% share or total)

Exporters	2001	2002	2003	2004	2005	2006	2007	2008	2009
China	20.35	27.30	31.18	30.26	29.08	34.48	33.80	31.43	35.65
Thailand	14.50	12.23	15.06	19.50	21.92	21.75	19.13	20.94	24.35
Singapore	17.31	19.75	22.33	21.02	18.50	16.09	15.48	20.43	14.04
Korea	9.49	5.40	6.30	5.22	3.73	3.46	5.81	3.87	6.40
Malaysia	8.06	9.01	4.80	4.82	7.64	4.72	4.17	4.97	3.33
India	2.52	2.81	3.03	3.63	3.65	3.54	3.24	3.77	3.28
Japan	7.65	4.36	4.23	3.38	2.86	2.96	3.49	2.99	3.18
Indonesia	2.82	2.05	1.56	1.94	2.43	3.93	5.22	3.98	2.76
Chinese Taipei	6.98	5.53	3.87	2.19	2.45	1.94	1.39	1.49	1.29
Others	10.33	11.56	7.63	8.03	7.75	7.12	8.28	6.13	5.72

Source: Author's calculation based on the ITC database

In Table 2-3, the share of Chinese's exports to Myanmar has increased after the meeting of heads of these two countries. The share of Myanmar's imports from China was 20.35 percent in 2001. It shows an accelerating rate of Chinese's exports to Myanmar. The share of Chinese's exports to Myanmar was 35.75 percent in 2009. The increase of trade with China was due mainly to the sanctions of the US and the EU. Following China, Thailand's exports to Myanmar have increased since Myanmar became a member of ASEAN. Myanmar's imported goods from Thailand were 14.50 percent of Myanmar's total imports in 2001. It increased to 24.42 percent

in 2009. The other suppliers of Myanmar are Singapore, the Republic of Korea, Malaysia, India, Japan, and Indonesia.

2.2.4 Industrial Development in Myanmar

Myanmar has reached a double-digit GDP growth rate every year for the past ten years. Some have criticized the abnormality of Myanmar's growth rate because the neighboring countries of a similar level have not experience such growth. International organizations like the International Monetary Fund (IMF) and World Bank have pointed out that Myanmar's GDP may have had zero growth in the fiscal year 2003/2004 when considering other social indicators. Because Myanmar's situation at that time was at a very low level in terms of imports, with structural rigidities, and the effects of sanctions and the banking crisis, it was impossible to grow the GDP at that time. However, the official data of Myanmar was declared by the government as 13.8 percent in 2003.

When looking at the experience of Myanmar's economy, it did not see much change in the structure of the economy. Under the period of colonial rule, Myanmar's GDP was mostly dependent on agriculture. In the fiscal year 1938/39, the share of agriculture in the GDP was 47.9 percent. In 2007, the share of agriculture also was nearly at the same level as six decades before. It was clear that the share of agriculture had not fallen and the economy still heavily relied on the traditional economy. On the other hand, the share of industry in the GDP was only 19.9 percent, while compared to countries of the same level such as Laos (31.8%) and Cambodia (26.8%), the share of Myanmar's industry was the lowest in the region (Myint 2009, 16).

To catch up the advanced countries, Myanmar set up its long-term industrialization vision under the SPDC regime. According to Myint (2009),

“Thirty Years Industrial Development Plan” is unrealistic to reach the same level as the advanced nations like Japan and the Western World within thirty years. Planning was to show the implementation and aims to reach a stage of industrialization in Myanmar (Myint 2009, 19).

However, the industrialization goals of the SPDC regime were described as follows:

- 1) Be at the same level as the fellow ASEAN countries by the end of the Second Five Year Plan (2015)
- 2) Be on a similar status as advanced Asian countries, like Japan by the end of the Fourth Five Year Plan (2020)
- 3) Catch up with the industrialized countries of the West by the end of the Sixth Five Year Plan (2030).

Since the sanctions imposed by the US, manufacturing industry like garments has declined dramatically. In the current situation, the growth of the garment exports of Cambodia and Vietnam is a significant challenge for Myanmar. To enter into a situation where Myanmar is a leading garment manufacturer, the country needs to focus hard on the implementation of strong policy guidelines and visions. At the moment, Myanmar has to attract the FDI to invest in this labor-intensive industry. Since the development of a traditional manufacturing industry is essential for a latecomer like Myanmar, it should create a manufacturing base like the garment and agro-based processing industries for agricultural products in the global market. Then diversified products should also be tried in order to promote the long-term development of Myanmar’s economy. As Myanmar possesses a cheap, well-educated workforce and is rich in natural resources, improvements in this industry can create many jobs for local people and then increase national wealth.

2.3 Conclusion

There were two turning points for trade and industrial development in Myanmar. In the 1990s, Myanmar's exports grew in the global market, due to the boom in garment exports, and in 1999, it became the main export of Myanmar and the top earning export until 2002. However, it ended with the US trade embargo on Myanmar around 2003. Next was the founding of the new field of natural gas in 2003. After the sanctions imposed by the US, Myanmar's garments that were once exported to the US and European markets collapsed and natural gas became the main share of the GDP. Since natural resources can deplete in the future, if the government cannot handle it systematically with the careful plan, it may harm the environment. The exploration of natural resources only does not favor long-term growth for Myanmar. Therefore, the government should pay attention to exports that can drive long-term development. In order to catch up to its neighboring countries and its fellow ASEAN members, Myanmar has to develop a manufacturing industry that can support more job opportunities for local people in the future.

Up to now, the primary exports are still from the resource-based industries. Before exploring new export patterns such as extraction of mineral resources and natural gas in 2003, Myanmar's main exports were primary products such as rice, minerals, and wood products. Since the colonial period, such kinds of exports accounted for 75 percent of Myanmar's GDP. According to Myint (2009) ,

“The reliance on primary commodity exports was 55.7 percent in 1990/2000, and counting the transactions of a share of the border trade, this share to GDP is still the same as 50 years before”.

Hence, the nature and pattern of Myanmar's exports have not yet been changed to be comparable to its fellow ASEAN members.

However, Myanmar enhanced agricultural products to the ASEAN market because the tariff rate and non-tariff barrier were reduced under the CEPT scheme. According to Mya Than, coordination of economic policy among ASEAN countries can expand intra- and extra-ASEAN. Therefore, the evidence has shown that the CLMV's garment, textile, and agro-based industries have grown since joining the association (Than and Gates 2001, 16). Apart from the foreign exchange rate of Myanmar, if the export value could be converted to market rate, Myanmar's trade value would be higher than the current situation. Since the earnings from natural gas were recorded at the official rate (six Kyat per US dollar), it has understated the earnings from gas export. If the amount was converted to market value, the export earnings would increase to 150-200 times the market rate of about 1000-1200 kyat per US dollar. In 2006-07, Myanmar's gas export earnings were 1.25 billion US dollars (7.5 billion kyats). If this earning from gas was recorded at the market price, it would become 1,500 billion kyats. Therefore, the recording of Myanmar's trading system is one of the challenges facing Myanmar in its economic development (Turnell 2007, 2).

Chapter 3: An Analysis of Myanmar's Economy Using Revealed Comparative Advantage (RCA)

3.1 Research Objectives and Questions

This chapter explores the export competitiveness of Myanmar by using the Revealed Comparative Advantage (RCA) index. The study aims to present the recent trade pattern of Myanmar in ASEAN and observe the trade potential of Myanmar with the CLV (Cambodia, Laos, and Vietnam) with regional economic integrations.

Moreover, the study intends to investigate the change in export competitiveness and the comparative advantage of Myanmar along with the CLV. In order to understand the changing export structure of each country, the study uses the Harmonized System (HS) of two-digit industries and the RCA's variation to investigate the strength and weakness of their industrial exports. Finally, the study applies the RCA correlation coefficients across commodity and country to examine the change in their export patterns and competitiveness.

Up to now, the Myanmar export is still from the resource-based industry. When looking back the experience of Myanmar's economic performance, it did not see much of change in the structure of the economy. Therefore, the Myanmar GDP was mostly relying on agriculture. Therefore, in order to understand how the export pattern of Myanmar was changed during the reform process under the SPDC regime in the period (2001-2012), the study uses the RCA approach to conduct the evolution/change in Myanmar's industries.

This chapter attempts to address questions of how regional economic integration like the ASEAN and its neighboring countries affects the export pattern of Myanmar's economy. In addition, in the regional integration process, it explores how Myanmar can enhance its market to compete with the ASEAN latecomers (CLV) and the advanced ASEAN members in the

future. Moreover, based on the findings, the research intends to compare the stages and trends between Myanmar and CLV in general and more specifically focus on the higher ranking of RCA in their export patterns.

3.2 Overview of the Revealed Comparative Advantage (RCA)

Balassa (1965) introduced the concept of Revealed Comparative Advantage (RCA) by focusing on the long-term effects of trade liberalization. Balassa also continued to expand the theory of international trade, the measurement of RCA, and the determinant factors that were influencing comparative advantages. Finally, the measuring of the export performance index was widely known as the Balassa Index or the Revealed Comparative Advantage index. Following the index, Bowen (1983) further introduced two indices for RCA, the net trade intensity and the production intensity index. Hillman (1980) explored the Balassa index to examine the relationship between RCA and competitiveness for cross-commodity and cross-country comparison. Hence, this index is described as the Hillman index for cross-country comparison. Vollrath (1991) discussed and compared alternative indices of RCA with global intensity measures. Vollrath examined ten indices comprising export performance indices of the Balassa index. Among them, the Balassa index is most appropriate to use for relative export advantage measure because the index eliminates the country and commodity double counting in world exports. Vollrath concluded that the most satisfying measures are the relative export share of the Balassa index.

As a result, many researchers have used the export performance index and net export ratio to examine the comparative advantage of a country by comparing the RCA index cross-commodity and cross-country. Since then, empirical research has focused on measuring the comparative advantage of a country in exports, industry, and national level. Researchers have used different approaches for export-import analysis (Balassa 1979).

Empirical study on the comparative advantage of Cambodia, Laos, Vietnam, and Myanmar (CLMV) is still limited, in particular for Myanmar. The Japan International Cooperation Agency (JICA) analyzed Cambodia's export share and its RCA by selecting products such as garments, footwear, frozen fish, crustaceans, tapioca and derived products, palm oil, and automotive electrical equipment for the study periods (2000-2020). The study found that although Cambodia has a comparative advantage in garment exports, it would slightly lose its RCA and share of total exports around 2010 and then increase again until 2020. Footwear, some processed agricultural products, and frozen fish were shown to be the potential major export commodities in the Cambodian economy (JICA 2007).

Hara and Shuto (2005) examined the Laotian competitiveness structure and the change in its trade patterns along with selected East Asian countries. They calculated the RCA and the NEI indices for the Laotian economy. In their study, Laos had a revealed comparative advantage in agricultural commodities, natural resource goods, and handicraft products.

Trung (2002) investigated the Vietnamese trade regime by using the revealed comparative advantage index for six selected ASEAN countries. In the study, Vietnam had RCA mainly in primary commodities such as agricultural products, forestry, minerals, and mining. Furthermore, Vietnam has a strong RCA in labor-intensive manufacturing industries such as textiles, clothing, footwear, and furniture.

For Myanmar, Aung and Than (2007) examined the cooperation of international trade between the BIMSTEC and Japan focusing on Myanmar. In their study, Myanmar had the top RCA in fuel and mining products, maintaining its RCA and showing an increasing trend. The study also found the highest RCA in textile and clothing products. Nevertheless, later it showed a weakening trend after the start of economic sanctions by the US in 2003.

As the export performance index is the most suitable index for Myanmar to evaluate comparative advantage with its competitors, the Myanmar RCA is calculated from the available data from trade partners of Myanmar from 2001 to 2012. The study evaluates the competitive position, competitive strength, and the market trend of Myanmar in the ASEAN and the global markets.

3.3 Research Methodology

This study applies the time series data of the Harmonized System (HS) codes of the International Trade Centre (ITC) database, covering all commodities groups available from Myanmar's trade partners and the CLV for the study period 2001-2012. This chapter attempts to explore the comparative advantage and competitive strength of Myanmar's exports and the CLV in the context of ASEAN and the global economy.

Based on data availability, the period of study is 2001 to 2012. As the data availability for the CLMV is limited, most of the data has been collected from the ITC database. Even if the data is available for the advanced ASEAN countries and for Vietnam for some years, the trade data for Cambodia, Laos, and Myanmar was not available. Hence, the study uses the data reported by trade partners of Myanmar, Cambodia, and Laos. The export structures of CLMV in the world and the ASEAN market were calculated by using the HS code two-digit industry categories.

When calculating the RCA with respect to ASEAN, some data were not available for the study period. Therefore, calculations for these years were omitted.

3.3.1 Measuring Comparative Advantage

According to David Ricardo and the Heckscher-Ohlin theoretical model, a country's comparative advantage depends on its resource endowments and technology level. If a country

possesses such factors and can produce a commodity efficiently with the least cost, this country may have a comparative advantage. As the criteria to measure a country's advantage based on the traditional methods was too complex, Balassa introduced the Revealed Comparative Advantage (RCA) index to overcome this issue (Balassa 1965, 25). This index is based on the export performance of a country, revealing its comparative advantage. Since its creation, many researchers have been using this index to examine the export performance of a country and its competitiveness.

Bela Balassa's (1965) formula is shown in the following equation:

$$RCA_{i,j} = \frac{X_{i,j}/X_{w,j}}{X_{i,tot}/X_{w,tot}} \quad (or) \quad RCA_{i,j} = \frac{X_{i,j}/X_{i,tot}}{X_{w,j}/X_{w,tot}} \quad \text{Equation 3-1}$$

Where,

$RCA_{i,j}$ = the revealed comparative index of country i in commodity group j

$X_{i,j}$ = a country i export of commodity group j

$X_{w,j}$ = world export of commodity group j

$X_{i,tot}$ = total export of country i , and

$X_{w,tot}$ = total export of the world.

Calculating Myanmar's RCA is as follows:

$$RCA = \frac{\text{Myanmar export in sector } i / \text{Myanmar export in all sector}}{\text{World export in sector } i / \text{World export in all sector}} \quad \text{Equation 3-2}$$

RCA is defined as the ratio between a country's commodity export share to the world and a country's total exports share in the total exports of the world. The RCA index is a non-negative value. The result of an index '1' means a country's exports share in the commodity group 'j' has a comparative advantage in the total exports of the world, whereas if the RCA

index shows a negative, it indicates that the country has a disadvantage in the corresponding commodity group.

However, the RCA index has some deficiencies when observing real trade patterns, as government interventions may lead to the distorting of trade patterns. Policy interventions are import restrictions, exports subsidies and other protectionist policies of governments. These policies are the primary causes of the misinterpretation of a country's comparative advantage. Currently, in practice, the RCA index is commonly accepted and widely used to analyze a country's export competitiveness and comparative advantage.

3.3.2 The Variation of RCA Values

In order to understand the changing export pattern of Myanmar and the CLV to the global market, the study uses the Bender and Li (2002) method to calculate the RCA's first three-year average (2001-2003) and the RCA's last three-year average (2010-2012). These changing trends of average RCA show the competitiveness of products in which their strength has remained steady or degraded during the selected period.

The calculations of variation are based on the following:

$$RCA_i \text{ Variation rate} = \frac{RCA_{it} - RCA_{i0}}{RCA_{i0}} \quad \text{Equation 3-3}$$

RCA_{i0} = the value of RCA period 0 for (*i*) industry

RCA_{it} = the value of RCA period *t* for (*i*) industry

$RCA_{it} - RCA_{i0}$ = the value of RCA's variation from period 0 to period *t* for (*i*) industry

The RCA's variation rate shows that if the result is positive, the comparative advantage has strengthened from the beginning to the end for industry (*i*); if the results are negative, the comparative advantage has weakened from the start to the end for industry (*i*).

In order to calculate the change in export patterns of the CLMV, the averages of the first three years and the last three years are calculated for the export sector of the CLMV in which their RCA is greater than one. The average RCA is an indicator of the real RCA change between the beginning and the end. Therefore, variations in these sectors' RCA averages indicate the changing export pattern from the beginning to the end.

In order to examine the correlation coefficient, the study uses the method of Clark (2005), and further exploration by Chien (2010). In their studies, if an industry's RCA values shrink in a particular region while expanding in another, the industry faces the shifting effect of the RCA in the export pattern. If certain industries in regions gain a comparative advantage and become more competitive with a positive correlation at the same time, it indicates that these industries compete against each other in these regions.

In the same region, if the RCA's correlation coefficient from period (0) to period (t) is high, it shows that the industrial structure change is small from period (0) to period (t); conversely, if the correlation coefficient is low, it indicates the industrial structure change is large. In different regions, if the RCA's correlation coefficient is high, then the industrial development pattern in a certain region follows that of another region (Chien 2010, 119-120, Clark 2005).

As per the Clark method, high value (+1) means a strong positive correlation, low value (-1) a negative correlation and a value of zero is the absence of correlation. A high RCA value is a strong similarity in the export composition. A low value in RCA correlation means a change in the commodity and export diversification.

3.4 Results and Findings

This chapter uses the method of Balassa to calculate the RCA from 2001 to 2012 for the competitiveness of Myanmar and the CLV. The comparative advantage result for Myanmar

shows where its RCA values are equal to and greater than one at the ASEAN and the global level. The results show the industries in which the RCA values are one and greater than one. Most of the Myanmar RCA are agriculture, minerals, mining, and some manufacturing industries.

In order to understand the relationship of the CLMV in the global market, I compared their top ten ranks of RCA values to analyze the change of export patterns on a global level, because most the RCA values of CLMV compete against each other on the global level. The study examines their export trends by looking at how they compete with each other on the global market.

Table 3-1 The Changing Top Ten-Export Pattern of Myanmar (2001-2012)

HS Code	Product label	2001-2003	2010-2012
07	Edible vegetables and certain roots and tubers	28.61	29.73
44	Wood and articles of wood, wood charcoal	15.96	16.70
14	Vegetable plaiting materials, vegetable products	16.07	6.27
61	Articles of apparel, accessories, knit or crochet	11.19	6.53
03	Fish, crustaceans, mollusks, aquatic invertebrates	9.35	6.81
46	Manufactures of plaiting material, basketwork, etc.	9.58	5.03
62	Articles of apparel, accessories, not knit or crochet	7.17	0.05
10	Cereals	3.70	3.25
27	Mineral fuels, oil, distillation products, etc.	2.71	2.27
12	Oil seed, oleaginous fruits, grain, seed, fruit, etc.	2.49	2.26

Source: Author's calculation based on the ITC database

Myanmar's top ten ranking RCA on the global level are 07, 44, 14, 61, 03, 46, 62, 10, 27, and 12. In order to compare with Cambodia, Laos, and Vietnam, the top ten rank of the CLV's RCA at the global level were selected. Myanmar and Cambodia compete with each other on a global level in industries such as articles of apparel, accessories, knit or crochet (61),

articles of apparel, accessories, not knit or crochet (62) and vegetable plaiting materials, vegetable products (14). For industry (14), while Myanmar maintained its RCA, Cambodia lost its RCA at the global level. In the competition in areas (61) and (62), Myanmar gained RCA in the early years and lost its RCA as time progressed, while Cambodia has maintained its RCA value at the global level. It can be said that the apparel industries shifted from Myanmar to Cambodia at the global level.

The top ten rank of Cambodia in the global arena are 61, 49, 65, 64, 62, 63, 40, 55, 14, and 25 (Sai 2011). Cambodia had strong competitiveness in industries such as articles of knit or crochet apparel accessories (61) and printed books, newspapers, pictures (49) at the start and maintained its RCA on the global level until 2009. Cambodia gained its RCA in industries such as salt, sulphur, earth, stone, plaster, lime and cement (25). After that, it declined at the end of the period (2010-12). Although Cambodia had a strong RCA value in industries such as footwear, gaiters (64), articles of apparel, accessories, not knit or crochet (62) and salt, sulphur, earth, stone, plaster, lime and cement (25), it tended to decline at the end of period (2010-12).

The top ten rank of Laos RCA values globally are 14, 44, 09, 62, 61, 13, 01, 12, 26, and 74 (Sai 2011). The industries in which Myanmar and Laos share comparative advantage in their top ten ranks are wood and articles of wood, wood charcoal (44), articles of apparel, accessories, knit or crochet (61), articles of apparel, accessories, not knit or crochet (62). Both have a strong RCA value in wood products and articles of wood, wood charcoal (44), and maintain their competitiveness at the global level. Despite Laos having a strong RCA value in this industry, its RCA value declined from the start period (2001-03) to the period (2007-09) and then increased again at the end of period (2010-12). Meantime, the first rank of Laos's RCA, which is vegetable plaiting materials and vegetable products (14), declined from the start period

(2001-03) to the end of period (2010-12). This means Laos has started to lose its competitiveness in this product at the global level.

Both Laos and Myanmar lost their RCA values in the products of articles of apparel, accessories, knit or crochet (61) and articles of apparel, accessories, not knit or crochet (62), while Cambodia increased its RCA value in these industries during the period (2007-09). This means these industries shifting from Laos and Myanmar to Cambodia happened at a global level. However, Cambodia started to lose its RCA in articles of apparel, accessories, knit or crochet (61) at the end of the study period (2010-12).

The top ten rankings of Vietnam RCA are 46, 09, 03, 64, 14, 10, 50, 62, 65 and 61 (Sai 2011). The industries in which Myanmar and Vietnam have shared comparative advantage are vegetable plaiting materials and vegetable products (14), articles of apparel, accessories, knit or crochet (61), fish, crustaceans, mollusks, and aquatic invertebrates (03), manufactures of plaiting material, basketwork (46), articles of apparel, accessories, not knit or crochet (62), and cereals (10).

While Vietnam had strong RCA value in vegetable plaiting materials and vegetable products (14), Myanmar's RCA value declined at the end of period (2010-12). While Myanmar lost its RCA value in the articles of apparel, accessories, knit or crochet (61), Vietnam has maintained its RCA value and maintained its competitiveness at the global level. Both Vietnam and Myanmar maintained their strong RCA value in fish, crustaceans, mollusks, aquatic invertebrates (03) at the global level. This means that Myanmar and Vietnam have a strong competitiveness in these products. While Myanmar lost RCA value in the manufacture of plaiting material, basketwork (46), Vietnam kept its strong RCA. Vietnam lost its RCA in cereals (10) while Myanmar maintained its RCA value at the global level.

3.4.1 The Variation Rate of Myanmar's RCA Value Exports to the World and ASEAN

By using the method of Benda and Lee, this section examines the variation rate of Myanmar's RCA value between the average RCA of (2001-03) and (2010-12). This shows the strength and weakness of Myanmar's RCA value at the global and ASEAN level.

Table 3-2 Myanmar's RCA and its Variation Rate at the Global Level (2001-2012)

HS Code	Product Level	2001-03 Average Value	2010-12 Average Value	Variation Rate (b-a) / a
01	Live animals	2.52	0.80	-0.68
03	Fish, crustaceans, mollusks, aquatic invertebrates	9.35	6.81	-0.27
05	Products of animal origin	1.13	1.35	0.20
07	Edible vegetables and certain roots and tubers	28.71	29.73	0.04
09	Coffee, tea, mate and spices	1.24	0.47	-0.62
10	Cereals	3.71	3.26	-0.12
12	Oil seed, oleaginous fruits, grain, seed, fruit, etc.	2.49	2.26	-0.09
14	Vegetable plaiting materials, vegetable products	16.11	6.27	-0.61
27	Mineral fuels, oils, distillation products, etc.	2.7	2.27	-0.16
44	Wood and articles of wood, wood charcoal	15.95	16.7	0.05
46	Manufactures of plaiting material, basketwork	9.58	5.03	-0.47
61	Articles of apparel, accessories, knit or crochet	11.23	6.53	-0.42
62	Apparels, accessories, not knit or crochet	7.15	0.05	-0.99
64	Footwear, gaiters and the like, parts thereof	1.16	0.01	-0.99
65	Headgear and parts thereof	3.14	0.02	-0.99
74	Copper and articles thereof	2.46	0.00	-1.00

Source: Author's calculation based on the ITC database

In Table 3-2, the results show the changing RCA rate between the RCA average value of (2001-2003) and (2010-2012) at the global level.

1) The HS two-digit industries in which Myanmar gained the RCA average value where the beginning (2001-2003) average value was greater than one and was still higher than one at the end of period (2010-2012) are 03, 05, 07, 10, 12, 14, 27, 44, 46, and 61.

2) The HS two-digit industries where Myanmar lost the RCA average value where the beginning (2001-2003) average value was greater than one, but where the average RCA values declined at the end of period (2010-2012) are 01, 09, 62, 64, 65, and 74.

3) The HS two-digit industries of Myanmar with the (2001-2003) RCA average value and the (2010-2012) RCA average value greater than 2 are 03, 07, 10, 12, 14, 27, 44, 46, and 61.

The RCA variation rates that are positive and show the strengthening of comparative advantage from the period (2001-03) to the period (2010-12) are products of animal origin (05), edible vegetables and certain roots and tubers (07), and wood, articles of wood, wood charcoal (44). Therefore, Myanmar enhanced its RCA in these industries from the start of the period (2001-2003) to the end of period (2010-12).

The RCA variation rates that are negative and show weakness in comparative advantage from period 0 to period t are live animals (01), fish, crustaceans, mollusks, aquatic invertebrates (3), coffee, tea, mate and spices (09), cereals (10), oil seed, oleaginous fruits, grain, seed, fruit, etc. (12), vegetable plaiting materials, vegetable products (14), mineral fuels, oils, distillation products, etc. (27), manufactures of plaiting material, basketwork (46), articles of apparel, accessories, knit or crochet (61), articles of apparel, accessories, not knit or crochet (62), footwear, gaiters and the like (62), headgear and parts (65), and copper and articles (74). Therefore, Myanmar lost its RCA value in 13 out of 16 industries.

Myanmar has a strong RCA value at the global level in industries such as fish, crustaceans, mollusks, aquatic invertebrates (03), edible vegetables and certain roots and tubers (07), vegetable plaiting materials, vegetable products (14), wood and articles of wood, wood

charcoal (44) and mineral fuels, oils, distillation products (27), manufactures of plaiting material, basketwork (46), articles of apparel, accessories, knit or crochet (61), and articles of apparel, accessories, not knit or crochet (62).

Table 3-3 The Variation Rate of Myanmar RCA Value Exports to ASEAN

HS Code	Product label	2001-03 Average Value	2010-12 Average Value	Variation Rate (b-a) / a
01	Live animals	8.82	2.59	-0.71
03	Fish, crustaceans, mollusks, aquatic invertebrates	4.51	3.64	-0.19
05	Products of animal origin	4.96	7.12	0.44
07	Edible vegetables and certain roots and tubers	49.09	40.02	-0.18
08	Edible fruit, nuts, peel of citrus fruit, melons	1.45	0.99	-0.32
12	Oil seed, oleaginous fruits, grain, seed, fruit, etc.,	13.33	17.73	0.33
14	Vegetable plaiting materials, vegetable products	8.10	2.46	-0.70
24	Tobacco and manufactured tobacco substitutes	1.12	0.29	-0.74
27	Mineral fuels, oils, distillation products, etc.	2.57	2.15	-0.16
44	Wood and articles of wood, wood charcoal	9.73	9.14	-0.06
46	Manufactures of plaiting material, basketwork,	3.26	2.89	-0.11
53	Vegetable textile fibers, paper yarn, woven	5.38	0.90	-0.83
61	Articles of apparel, accessories, knit or crochet	6.92	5.09	-0.26
62	Apparel, accessories, not knit or crochet	5.73	0.04	-0.99
63	Other made textile articles, sets, worn clothing	1.67	6.57	2.93
65	Headgear and parts thereof	3.70	0.03	-0.99
74	Copper and articles thereof	2.92	0.00	-1.00
97	Works of art, collectors pieces and antiques	2.83	3.56	0.26

Source: Author's calculation based on the ITC database

At the start period (2001-2003), Myanmar had an RCA greater than one at the global level for 01, 03, 05, 07, 09, 10, 12, 14, 27, 44, 46, 61, 62, 64, 65 and 74. In the time period

(2001-03), Myanmar had RCA values greater than one in 16 industries; however, it could maintain its RCA values in only 10 industries at the end of period (2010-12). Myanmar lost its RCA values in industries such as live animals (01), fish, crustaceans, mollusks, aquatic invertebrates (3), coffee, tea, mate and spices (09), cereals (10), oil seed, oleaginous fruits, grain, seed, fruit, etc. (12), vegetable plaiting materials, vegetable products (14), mineral fuels, oils, distillation products, etc. (27), manufactures of plaiting material, basketwork (46), articles of apparel, accessories, knit or crochet (61), articles of apparel, accessories, not knit or crochet (62), headgear and parts (65), and copper and articles (74).

In Table 3-3, results are based on the calculation of the RCA average values for (2001-2003) compared with the RCA average for (2010-2012) of Myanmar at the ASEAN level.

1) The HS two-digit industries in which Myanmar gained the RCA average value where the start (2001-2003) average value was greater than one and was still higher than one at the end of the period (2010-2012) are 01, 03, 05, 07, 12, 14, 27, 44, 46, 61, 63, and 97.

2) The HS two-digit industries where Myanmar lost the RCA average value, where the start (2001-2003) average value was greater than one, but the average RCA values declined by the end of period (2010-2012) are 08, 24, 53, 62, 65, and 74.

3) Myanmar's RCA average value in the period (2001-2003) and (2010-2012) which were greater than two were 01, 03, 05, 07, 12, 14, 27, 44, 46, 61, 63, and 97.

The RCA variation rates that were positive and showed strengthening of comparative advantage from (2001-03) to (2010-12) were: products of animal origin (05), oil seed, oleaginous fruits, grain, seed, fruit, etc. (12), other made textile articles, sets, worn clothing etc. (63) and works of art, collectors' pieces and antiques (97). Therefore, Myanmar enhanced its RCA in four industries during the 2001-2012 time periods.

The RCA variation rates that were negative and showed a weakening of comparative advantage from period 0 to period t were: live animals (01), fish, crustaceans, mollusks, aquatic invertebrates (3), edible vegetables and certain roots and tubers (07), edible fruit, nuts, peel of citrus fruit, melons (08), vegetable plaiting materials, vegetable products (14), tobacco and manufactured tobacco substitutes (24), mineral fuels, oils, distillation products, etc. (27), wood and articles of wood, wood charcoal (44), manufactures of plaiting material, basketwork (46), vegetable textile fibers, paper yarn, woven fabric (53), articles of apparel, accessories, knit or crochet (61), articles of apparel, accessories, not knit or crochet (62), headgear and parts (65), and copper and articles (74). Therefore, Myanmar lost its RCA value in 14 out of 18 industries from (2001-2003) to (2010-2012).

Myanmar has a strong RCA value at the ASEAN level in industries such as products of animal origin (05), edible vegetables and certain roots and tubers (07), oil seed, oleaginous fruits, grain, seed, fruit, etc. (12), wood and articles of wood, wood charcoal (44), articles of apparel, accessories, knit or crochet (61), and other made textile articles, sets, worn clothing etc. (63).

At the start of the period (2001-2003), Myanmar had an RCA value greater than one at the ASEAN level in such industries as: 01, 03, 05, 07, 08, 12, 14, 24, 27, 29, 44, 46, 53, 61, 62, 63, 65, 74 and 97. In the time period (2001-03), Myanmar had RCA values greater than one in 18 industries and it maintained its RCA values in only four industries by (2010-12). Myanmar lost its RCA values in industries such as live animals (01), fish, crustaceans, mollusks, aquatic invertebrates (3), edible vegetables and certain roots and tubers (07), edible fruit, nuts, peel of citrus fruit, melons (08), vegetable plaiting materials, vegetable products (14), tobacco and manufactured tobacco substitutes (24), mineral fuels, oils, distillation products, etc. (27), wood and articles of wood, wood charcoal (44), manufactures of plaiting material, basketwork (46),

vegetable textile fibers, paper yarn, woven fabric (53), articles of apparel, accessories, knit or crochet (61), articles of apparel, accessories, not knit or crochet (62), headgear and parts (65), and copper and articles (74). Therefore, Myanmar lost its RCA value in 14 out of 18 industries from (2001-2003) to (2010-2012).

3.4.2 Analysis of the Correlation Coefficient of CLMV at the Global Level

Table 3-4 Myanmar vs. Cambodia, Laos, and Vietnam at the Global Level

Year/Country	Myanmar/Cambodia	Myanmar/Laos	Myanmar/Vietnam
2001	0.17	0.42	0.32
2002	0.15	0.52	0.35
2003	0.14	0.65	0.36
2004	0.05	0.71	0.30
2005	-0.05	0.71	0.24
2006	-0.03	0.37	0.20
2007	-0.03	0.24	0.16
2008	-0.02	0.30	0.14
2009	0.07	0.17	0.13
2010	-0.01	0.06	n.a
2011	0.04	0.32	n.a
2012	0.18	0.32	0.04

Table 3-5 Myanmar vs. Cambodia, Laos, and Vietnam at the ASEAN Level

Year/Country	Myanmar/Cambodia	Myanmar/Laos	Myanmar/Vietnam
2002	-0.045	0.459	0.187
2003	-0.020	0.421	0.321
2004	0.018	0.423	0.239
2005	-0.030	0.345	0.159
2006	-0.037	0.284	0.141
2007	-0.044	0.313	0.083
2008	-0.018	0.094	0.074
2009	-0.030	n.a	0.183
2010	-0.002	n.a	0.008
2011	-0.011	n.a	n.a

Note: * Data is not available

Source: Author's calculation based on the ITC database

Table 3-4 and Table 3-5 show the analysis of the correlation coefficient of CLMV. These calculations of the CLMV are based on their exports to the world market and ASEAN.

Among the CLMV, Myanmar had a strong correlation RCA with Laos in exports to the world market and at the ASEAN level. Most of the correlation is significant from the beginning to the end. The main finding was that Myanmar and Laos have strong competitiveness in industries such as wood products (44), vegetable products (14) and, articles of apparel, accessories, knit or crochet (61). In 2003, despite the US sanction imposed on Myanmar's garment exports to the US and EU market, the boom in natural gas and hydropower production started at the same time. Meanwhile, Laos also developed its mineral fuels, oils, distillation products (27) from 2003 to 2004 and further in 2005. Laos also developed its electrical, electronic equipment (85) from 2003 to 2008 (ITC 2013). Therefore, starting from 2003 to 2005, the correlation between them was significant at some level. The top product in Laos RCA value in 2001, vegetable plaiting materials, vegetable products (14) started to decline in 2006. As a result, the correlation between them was not significant starting from 2006. The vegetable products (14) of Laos RCA further declined in 2009. In the beginning, it was in the top ten of its RCA. On the other hand, the Myanmar RCA value of mineral fuels, oils, distillation products (27) increased from 25.69 million US dollars in 2005 to 42.57 million US dollars in 2009. Additionally, starting from 2005, the RCA value of articles of apparel, accessories, knit or crochet (61) of Myanmar declined in 2004 and continued in 2009. Therefore, the competition between them would become insignificant later.

Regarding Vietnam, Myanmar competes with Vietnam in industries such as the articles of apparel, accessories, knit or crochet (61), articles of apparel, accessories, not knit or crochet (62), and fish, crustaceans, mollusks, aquatic invertebrates (03). Therefore, the correlation between them was significant on some level. However, because of the decline of Myanmar's

RCA value in industries such as the articles of apparel, accessories, knit or crochet (61), articles of apparel, accessories, not knit or crochet (62), their correlation is not as significant as at the start year. The remaining competition is only in industry (03).

The correlation between Myanmar and Cambodia is very low at the global level. The significant level of their correlation began in 2001. At that time, both exported garments to the global market. Since 2003, with the decline of Myanmar's global garment exports, the correlation between them has been very low and the correlation coefficient fell to negative in 2008. Therefore, they are now not correlated compared to the beginning year.

When comparing the top ten average of CLMV, there are some opposite trends in RCA value. If Cambodia has a certain comparative advantage in some industry, Laos and Myanmar lost their comparative advantage and in the meantime, Vietnam gained its comparative advantage and became more competitive with Cambodia. When analyzing the correlation coefficient of Myanmar and fellow ASEAN members, it came out that Myanmar's export structure is similar to that of Cambodia, Laos, and Vietnam. The export structure of Myanmar is complementary with that of the ASEAN-6.

With CLV, Myanmar competes with Cambodia in articles of apparel, accessories, knit or crochet (61) and articles of apparel, accessories, not knit or crochet (62). Myanmar competes with Laos in vegetable plaiting materials, vegetable products (14), wood and articles of wood (44), articles of apparel, accessories, knit or crochet (61) and articles of apparel, accessories, not knit or crochet (62). With Vietnam, Myanmar competes in commodities such as wood and articles of wood, wood charcoal (44), vegetable products (14), articles of apparel, accessories, knit or crochet (61), fish, crustaceans, mollusks, aquatic invertebrates (03), manufactures of plaiting material, basketwork (46), articles of apparel, accessories, not knit or crochet (62) and cereals (10).

Table 3-6 RCA's Correlation Coefficient of Myanmar and the CLV at the Global Level and ASEAN level (2001-03 versus 2010-12)

Global Level	Cambodia	Laos	Myanmar	Vietnam
2001-03 vs 2010-12	0.94	0.55	0.68	0.56
ASEAN level	Cambodia	Laos	Myanmar	Vietnam
2001-03 vs 2010-12	0.16	0.63	0.89	0.72

Source: Author's calculation based on the ITC database

In summary, in order to understand export structure change in each country's industries, this study uses RCA correlation coefficients of world exports for Myanmar, Cambodia, Laos, and Vietnam in the period 2001-2012. For each country, the calculation of CLMV results shows that if the correlation coefficients are small, the industrial export structure change is large and vice versa. In Table 3-6 the industrial correlation coefficient was 0.55 for Laos and 0.56 for Vietnam's exports to the world from 2001 to 2012. This means that, among the CLMV countries, Laos and Vietnam faced an industrial structure change at the global level. Laos has developed its industry from the primary sector to power production, such as electrical and electronic equipment (85) and mineral production such as mineral fuels, oils, distillation products (27) from around 2005-2006, hence, Laos experienced industrial change. Vietnam also diversified its industrial development during the reform process.

The correlation coefficient for the RCA value of Cambodia is very large. It shows the highest figure, 0.94, among the CLMV. From this, we may conclude that Cambodia did not experience industrial export structure change during the study period. The correlation coefficient of Myanmar is also lower than that of Cambodia, meaning a slower pace of diversification in Myanmar.

At the ASEAN level, Myanmar also faces the highest correlation coefficient of RCA value in the association's market. It shows the highest figure, 0.89, among the CLMV. From

this, we may conclude that Myanmar also has not experienced industrial export structure change during the study period at the ASEAN level.

3.4.3 Analysis of the Correlation Coefficient of RCA between Myanmar and ASEAN-6

The following table is based on the correlation coefficient between Myanmar and the ASEAN-6 in the global market.

Table 3-7 RCA's Correlation Coefficients of Myanmar vs. ASEAN-6 at the Global Level

Country/Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Myanmar/Thailand	0.073	0.060	0.034	0.074	0.042	0.043	0.048	0.031	0.051
Myanmar/Singapore	-0.036	-0.027	-0.063	0.015	-0.025	-0.066	-0.054	-0.074	-0.101
Myanmar /Indonesia	0.214	0.182	0.194	0.268	0.140	0.082	0.083	0.052	0.015
Myanmar/Malaysia	0.002	0.004	0.006	0.030	0.037	0.018	0.024	0.032	0.056
Myanmar/Philippine	0.214	0.200	0.208	0.128	0.091	0.084	0.092	0.073	0.051
Myanmar/Brunei	n.a	0.085	0.061	n.a	n.a	0.039	0.033	0.052	0.039

Note: *Data for some years are not available for Brunei

Source: Author's calculation based on the ITC database

Since the development gap between the advanced members and latecomers is enormous, the correlation coefficient between Myanmar and the ASEAN-6 is negative or very small, meaning that Myanmar and the advanced ASEAN members have not competed with each other because Myanmar's export structure is different from the advanced members and its export structure is complementary to that of the ASEAN-6.

3.5 Conclusion

The comparative advantage and competitiveness of Myanmar's export is analyzed by the RCA approach developed by Balassa. The variation of RCA value is examined by using the method of Benda and Lee. In the starting period (2001-03), Myanmar had RCA values greater than one at the global level in 16 industries. However, it could only maintain its RCA in 10

industries by the end of the period (2010-12). Myanmar lost its RCA values in industries such as live animals (01), fish, crustaceans, mollusks, aquatic invertebrates (3), coffee, tea, mate and spices (09), cereals (10), oil seed, oleaginous fruits, grain, seed, fruit, etc. (12), vegetable plaiting materials, vegetable products (14), mineral fuels, oils, distillation products, etc. (27), manufactures of plaiting material, basketwork (46), articles of apparel, accessories, knit or crochet (61), articles of apparel, accessories, not knit or crochet (62), headgear and parts (65), and copper and articles (74).

Myanmar competes with Cambodia in areas such as the articles of apparel; accessories knit or crochet (61) and articles of apparel, accessories, not knit or crochet (62). Although Myanmar had RCA in this sector in the early years, it lost its RCA over time. Cambodia could maintain its RCA value at the global level. Due to the effects of the US sanctions, Myanmar lost its comparative advantage in the industry of articles of apparel, accessories, knit or crochet (61) and articles of apparel, accessories, not knit or crochet (62) at the global level.

Myanmar competes with Laos in industries such as wood and articles of wood, wood charcoal (44), footwear, gaiters (64), the articles of apparel, accessories knit or crochet (61) and articles of apparel, accessories, not knit or crochet (62) and vegetable plaiting materials, vegetable products (14). Both have a strong RCA value in the industry (44) at the global level and kept their competitiveness. However, they lost their RCA value in sectors such as articles of apparel, accessories, knit or crochet (61) and articles of apparel, accessories, not knit or crochet (62), while Cambodia increased its RCA value in these industries.

Myanmar competes with Vietnam in areas such as the vegetable plaiting materials, vegetable products (14), the articles of apparel, accessories, knit or crochet (61) and articles of apparel, accessories, not knit or crochet (62), and fish, crustaceans, mollusks, aquatic invertebrates (03). They compete with each other in industries (61) and (62). Both lost their

RCA value in industry (46) as time passed, despite having strong RCA value in the early years. Both still have maintained their RCA value in cereal products (10) at the global level. The remaining area of competition is in industry (03).

Among the CLMV, Myanmar had a strong RCA correlation with Laos in exports to the world market and at the ASEAN level. Most of the correlation is significant from the beginning to the end. The main finding was both countries are competing strongly against each other in industries such as wood and articles of wood (44), vegetable products (14) and articles of apparel, accessories, knit or crochet (61).

Regarding Vietnam, Myanmar competes with Vietnam in industries such as articles of apparel, accessories, knit or crochet (61), articles of apparel, accessories, not knit or crochet (62), and fish, crustaceans, mollusks, and aquatic invertebrates (03). Therefore, the correlation between them was significant on some level. However, because of the degradation of Myanmar's RCA value in industrial areas such as articles of apparel, accessories, knit or crochet (61) and articles of apparel, accessories, not knit or crochet (62), their correlation was not significant in the start year. The remaining competition is only in the industry of fish, crustaceans, mollusks, and aquatic invertebrates (03).

When comparing the top ten average of CLMV, there are some changes of direction in RCA value. If Cambodia has a certain comparative advantage in some industries, Laos and Myanmar lost their comparative advantage and in the meantime, Vietnam gained a comparative advantage, and became more competitive with Cambodia. When analyzing the correlation coefficient of Myanmar and ASEAN members, it was shown that Myanmar's export structure is similar to that of Cambodia, Laos, and Vietnam. The export structure of Myanmar is complementary with that of the ASEAN-6.

The correlation between Myanmar and Cambodia is very low at the global level. The significant level of their correlation was in the start year 2001. At that time, both exported garments to the global market. Since 2003, with the decline of Myanmar's garment exports to the world, the correlation between them became very low level and the correlation coefficient fell to a negative in 2008. Therefore, they do not correlate much to each other as they did at the beginning.

For the ASEAN-6, since the development gap between the advanced members and newcomers is very large, the correlation coefficient between Myanmar and the ASEAN-6 is negative or very small, meaning that Myanmar and the advanced ASEAN members have not competed against each other in their exports to the world as the export structure of Myanmar is complementary with that of the ASEAN-6.

In summary, under ASEAN economic integration, Myanmar developed its labor-intensive industries like garment exports from the end of the 1990s to the early 2000s. This sector became the main export area of Myanmar and created the top export earnings until 2002. However, the evolution of labor-intensive industries and exports like the garment was suspended due to the US's trade embargo on Myanmar. During this period of embargo, among the CLMV, Vietnam experienced an evolution in its industry and export structure while Myanmar's were confined to resource-based ones. Therefore, Myanmar has a lot to catch up its industrialization process in ASEAN region.

Since Myanmar concentrated on exploring for natural gas from 2003, this sector became the main source of Myanmar's GDP. Up to now, Myanmar still relies on resource-based industries. Therefore, it is a large challenge for Myanmar to implement industrial development that provides job opportunities to local people. In addition, Myanmar's main exports are still from primary sources such as agricultural products, minerals, and wood products. Since the

socialist era in the 1960s, these kinds of exports have accounted for 75 percent of Myanmar's GDP. Hence, the nature and pattern of Myanmar exports must change in order to compete with other ASEAN members in the future (Myint 2009, 16).

Under the ASEAN FTA scheme, Myanmar could increase the export of agricultural goods to the ASEAN market because the tariff rate and non-tariff barrier were reduced under the CEPT scheme. If Myanmar can develop agro-based industry, other manufacturing industries, human resource-based industry, and IT industry, joining the ASEAN regional integration will be much more beneficial for Myanmar. Since the majority of these resources can be exported with a low tariff rate to ASEAN members, development in these industries will help Myanmar to compete with ASEAN members in the future.

After 1988, the liberalization of the market economy caused Myanmar's economy to grow on some levels. The allowing of private participation of both domestic and foreign firms helped Myanmar's industrialization to succeed in labor-intensive areas like the garment industry in the 1990s. Since allowing FDI investment in the private sector and joining the regional groups, the foreign capital sources flowing into Myanmar increased drastically and led to a boom in Myanmar's economy in labor-intensive manufacturing industries from 1997 to 2002. Therefore, this open-door policy created remarkable development in external trade through 1997 to 2002. However, the political instability of Myanmar is the main hindrance to Myanmar's economy. As there are uncertainties, FDI is reluctant to invest in Myanmar and will seek a good environment for their business, because most FDI is based on profit maximization.

In summary, export diversification has been very low in Cambodia, Laos, and Myanmar. Vietnam has been moving to more diversification of exports to the world. To some extent, the diversification of exports has been little found in the Cambodia, Laos, and Myanmar (CLM). To summarize, these findings would suggest that participation in AFTA has not brought

the positive effects of competitiveness to CLM yet. The results revealed that Myanmar has dynamic evolution in the mineral resource base industry, such as the extraction of natural gas. Cambodia has been improving in the garment production industry with competitiveness among CLMV. Laos has shifted from primary agricultural commodities to resource-based production, such as power production. Vietnam has been moving to diversify products with competitiveness under the regional integration process. Vietnam has also been moving ahead of CLM in the industrialization process of items such as electrical equipment and motor vehicle parts. Therefore, with the slow progress of CLMV, excluding Vietnam, the founders of ASEAN and the new members still have the challenge of removing the gap between the advanced members and the newcomers.

Chapter 4: A Comparative Assessment of Industrial Policies under East Asian Economic Integration

4.1 Introduction

From the early 1950s, East Asian countries such as South Korea, Malaysia, and Thailand adopted import substitution strategies and achieved successful industrial development through the 1960s (Amakawa 2010, 4). The development of East Asian economies in the 1980s was interdependent among countries, as they proceeded with export-oriented industrialization. An advanced country like Japan brought the transfer of industrial development to the East Asian latecomers, called “the flying wild-geese pattern”, in this period (Kojima 2000, 2-3). Through these processes, the trade pattern between countries was changed. The transfer of industry was led by Multi-National Enterprises (MNEs) through Foreign Direct Investment (FDI). The host country absorbed the catch-up effort from the advanced countries. The advanced countries enjoyed the lower costs of land and labor while the host country offered the advanced country incentives through foreign investment promotion policy. As capital and technologies entered the local firms of the latecomers, they also enjoyed an efficient use of these benefits.

The objective of this chapter is to draw an industrial policy for Myanmar based on the comparative advantage of Myanmar revealed through the RCA approach in the previous chapter. In order to implement Myanmar’s initiatives for industrial promotion, lessons from the industrial policies adopted by selected ASEAN members are surveyed in a comparative manner. The study focuses on the strategies selected from ASEAN members using trade liberalization and FDI as their major sources for industrial development. Firstly, Myanmar’s effort to implement its industrialization process within regional trade agreements will be reviewed. The lessons drawn from the area’s comparative studies and the current policy initiatives of Myanmar

are then combined into a set of policy packages. Finally, these policy scenarios are simulated using the general-equilibrium framework of the Global Trade Analysis Project (GTAP) model.

The current study looks at Malaysia as representative of the leading members of ASEAN, while treating Vietnam, Cambodia, and Myanmar as latecomers to industrial development in the region. This chapter is organized as follows. Section 4.2 reviews the development of industrial promotion policy under Regional Trade Agreements (RTAs). Section 4.3 discusses a comparative study of industrial promotion policies selected from ASEAN members to elaborate an industrial policy for Myanmar. Section 4.4 shows the GTAP model framework and policy simulations. Section 4.5 discusses the results, and Section 4.6 concludes the study and formulates policy implications for Myanmar.

4.2 Industrial Promotion Policies under Regional Trade Arrangements

In the 1960s, the process of trade liberalization generated many regional agreements all over the world. Bhagwati (1996, 22-25) asserted there were two waves of creation of Regional Trade Agreements (RTAs). One took place in Europe during the 1960s and 1970s, and the other in the United States (US) in the 1980s. A regional trading arrangement also emerged in Southeast Asia in the 1980s. The World Bank (2005, 27-31) described that, since the establishment of the World Trade Organization (WTO) in 1995, many countries had created regional trading arrangements to promote their industrial policies. The main regional trading arrangements are the North American Free Trade Area (NAFTA), the Asia-Pacific Economic Cooperation (APEC), the European Union (EU), and the Association of Southeast Asian Nations (ASEAN).

The objective of a country's industrial promotion is to achieve economic growth and structural change. It also involves producing goods with new technologies and then transforming from a traditional economy to a modern one. Urata and Kawai (2000, 50) describe

that the former technology transfer by MNEs in the 1990s was characterized by transferring technology of the home country to foreign affiliates. A later approach was transferring from an overseas affiliate of MNEs to local firms in host countries. The former type is called technology transfer while the latter is widely known as technical spillover. Hence, FDI accompanied by technology is critical for a country's development.

There are various definitions of industrial policy. UNCTAD (1998, 4) defines industrial policy as the effort of government to promote specific industries or sectors through policy initiatives. Therefore, industrial policy is a government's effort to choose the target industrial structure to promote productivity and efficiency. Industrial policy can affect agriculture, manufacturing, and services as well. In most developing countries, industrial policy is primarily focused on labor-intensive industries. The success of East Asian economies was mainly caused by their proactive policies in key industries. Japan, South Korea, Taiwan, and most recently China are examples.

Industrial policy debate has also been growing. Lin (2010), a former chief economist at the World Bank, argues that developing countries should pay attention to the development of new competitive industries to support the labor- and resource-intensive products in which they currently have a comparative advantage. Additionally, reinvestment in more productive industries can be continued over time. Altenburg (2011, 35) also avers that lower income countries can successfully implement proactive industrial strategies. However, the former successful industrial policies in East Asia may not be applicable in current developing countries because of their different institutions and the structures of their economies. Khan (2013, 1) asserts that in developing countries, a lack of organization and technological capability are often seen. Developing countries can grow by absorbing technology from advanced countries.

However, they may have some difficulties absorbing such technologies in the early stage. The appropriate level of training and skills may often be wanting at that moment.

A successful country can depend on the effectiveness of industrial policy and think about to whom and at what it is directed. Hence, the success of an industrial policy depends on how it is designed and implemented. At the moment, many developing countries like the ASEAN latecomers still have challenges in formulating their industrial policies in light of the competitiveness of economic integration. Following the world-wide developments in policy, advanced ASEAN members have been pursuing industrial promotion and economic development in the context of regional economic integration. Strategies for industrial promotion in Myanmar should also be assessed in this context. In the ASEAN region, Myanmar is a latecomer, along with Cambodia, Laos, and Vietnam. Therefore, I select Cambodia, Myanmar, and Vietnam to make a comparative study of their developments. Since Malaysia is one of the leading ASEAN members because of adopting a FDI policy in the 1970s, I select the Malaysian economy to observe its policy choices and then draws policy simulations for Myanmar using the GTAP model.

To summarize, industrial policies can be defined in the traditional narrow sense; that is, selecting/promoting key industries with favors and protective measures. In the recent discussions of industrial policies, however, many researchers often examine them in a broader sense, including general investment-conducive macro policies and institutional changes. Regarding broader policies, trade and FDI strategies under a strategic usage of regional trading frameworks are commonly discussed. In this study, I wish to design Myanmar's initiatives for industrial promotion as a member of the AFTA and the ASEAN. With this intention, I summarize those steps taken by Malaysia, the country that Myanmar policy makers often treat as a textbook case, and by the other latecomers in the ASEAN as important background, and

then concentrates more on the sectoral (decomposition) impact of trade, and FDI policies and technology transfer. Those are both areas of keen concern for policy makers in Myanmar today.

4.3 A Comparative Study of Industrial Policies among Cambodia, Vietnam, Malaysia, and Myanmar

The following section presents a comparative study of industrial policies among Cambodia, Vietnam, Malaysia, and Myanmar to formulate policy implications for Myanmar.

4.3.1 The Myanmar Experience

In 1962, Myanmar's economy was closed to international trade and practiced an import substitution policy called the Burmese Way to Socialism. As a result, the economy stagnated for over three decades and the country was classified as one of the Least Development Countries (LDC) (Thein 2004, 51-84). In 1988, under the State Peace and Development Council (SPDC) regime, several reforms were set up to promote a market-based economic system. The FDI law was introduced in November 1988. A strategy was set for the development of agriculture as the base from which the development of the rest of the economy would be built. As a result, Myanmar achieved annual growth during the reform period. Growth was driven by the strong performance of the agriculture sector, rapid growth in the private sector, FDI inflows (including in oil, gas, and mining), and vibrant exports due to liberalization and the development of tourism and construction (Thein 2004, 121-171).

Table 4-1 The Myanmar Industrial Share in GDP (1995-2014) (Share in %)

Sectors	1995	2000	2005	2010	2011	2012	2013	2014
Agriculture	60.0	57.3	46.7	36.8	32.5	30.6	29.5	27.9
Industry	9.9	9.7	17.5	26.5	31.3	32.4	32.4	34.4
Services	30.1	33.0	35.8	36.7	36.2	37.0	38.1	37.7

Source: Central Statistical Organization (CSO), Ministry of Planning and Finance, Myanmar

Table 4-1 shows Myanmar's industrial share of GDP from 1995 to 2014. In Table 4-1 the industrial share of manufacturing in GDP was stagnant and declined from 9.9 percent in 1995 to 9.7 percent in 2000, and then slightly rose to 17.5 percent in 2005. Myanmar's industrial share of manufacturing in GDP only rose from 9.9 percent to 17.5 percent from 1995 to 2005, insignificant compared to Vietnam (23 to 40 percent) and Cambodia (11 to 28 percent), as shown in the ADB database (Findlay, Park, and Verbiest 2015, 32). This shows that Myanmar's industrial share was the lowest among ASEAN nations. Therefore, Myanmar needs to increase the industrial share of manufacturing in its GDP.

Since President Thein Sein took office in 2011, the government has started to implement a development vision through political, economic, and social reforms. The first step was political change, followed by economic and social reform (New Light of Myanmar 2011). In 2015, the government established the National Export Strategy (NES) to promote industries. In the strategy, the NES is to promote export development and the competitiveness of Myanmar's products in the global markets (MOC 2015).

The government started a strategic plan in the Framework for Economic and Social Reforms (FESR) in January 2013. In the reform process, it identifies a number of short-term and a long-term development plan. The framework lays out reform priorities for long-term goals (2011-2031). Since Myanmar's export items are mainly primary resources, the NES will mainly focus on diversifying products because export items and destinations are very limited. Currently, over 40 percent of Myanmar's exports are still going to a single market. As Myanmar is abundant in agricultural resources, the priority sectors will be generally in agro-based and some labor-intensive manufacturing. Myanmar has also established a Special Economic Zone (SEZ) and an Export Processing Zone (EPZ) to promote industrial development (MNPED 2015).

Under the SPDC regime, economic reform was attempted through the promotion of FDI, encouraging private economic activities, and implementing fiscal and monetary policies. Under the Thein Sein regime, the reform goal is to establish a developed nation. The industrial policy is targeted to specific ownership, like the Myanmar Industrial Development Committee (MIDC), which is mostly dominated by military holding companies. The MIDC took monopoly power in strategic and key industries like gas, gems, and power production (Global Witness 2015). The industrial policy provides a favorable environment for this group while neglecting the development of domestic private industry. As a result, the country has not fully reached an international level compared to other ASEAN members. Myanmar's economy is still as weak as an underdeveloped state at the close of the twentieth century.

To sum up, many factors are undermining Myanmar's economy, such as a lack of macroeconomic policy, financial sources, poor infrastructure, cronyism, corruption, and political instability. In order for Myanmar to transform its industrial structure, policy adjustments like proactive industrial policy are necessary. Currently, Myanmar faces many challenges to implementing its industrialization process.

4.3.2 The Cambodian Experience

Cambodia experienced civil war in the 1960s. After achieving peace, Cambodia initiated its market-based economy in 1985. After that, the state monopoly of trade was abolished in 1987 (Chhair and Luyna 2014, 6-10). In 1988, a further attempt was made by strengthening the role of the private sector through liberalization. Foreign direct investment and financial programs for state enterprises were introduced in the mid-1980s. After the general election in 1993, Cambodia implemented a political and economic reform process under the Royal Government of Cambodia (Amakawa 2010, 9).

Moreover, Cambodia enjoyed textile exports to the US free of quotas. In 1999, Cambodia received duty- and quota-free access to the EU market for textile products (Bargawi 2005, 13). Following this development, FDI went into the garment industry. After that, the garment industry became the leading export sector, accounting for 80 percent of export earnings. Almost all the garment exports went to the US market under the Multi-Fiber Agreement (MFA). Although Cambodia achieved target growth during its industrialization process in the 1990s, most of the growth was dependent on a single industry operated by FDI through MNEs (Amakawa 2010, 10).

In 2005, the Cambodian government established a special economic zone. The objective was to promote the economy, attract FDI, and create job opportunities. As Cambodia's MFA was phased out in 2005, the country's advantage in garment exports began shrinking. However, Cambodia maintained its competitiveness in the market. Furthermore, from 2008 to 2012, Cambodia's exports in labor-intensive manufacturing diversified. Footwear became the major export item. Recently Cambodia established a special economic zone on the Cambodian-Thai border (Hill and Menon 2013, 13).

To sum up industrialization in Cambodia, foreign capital played a leading role in the economy, especially in the garment industry. Establishing an economic zone for promoting exports and job opportunities will be a potential source of growth for a latecomer like Cambodia.

4.3.3 The Vietnamese Experience

After a long civil war, Vietnam reunited in April 1975. During the reunification, Vietnam adopted the economic policy of price control, state subsidies and rationing through a centrally planned economic system. In the restructuring period, it took many years for Vietnam to adopt an economic policy. By the early 1980s, Vietnam started to support the idea of market

incentives. Finally, in 1986, Vietnam implemented a market mechanism called the *Doi Moi* (Renovation) policy (Ohno 2014, 240-241).

Soon after adopting the Doi Moi policy, economic growth was rapid, with the average rate of 7.4 percent during the period 1991-2010. During two decades, the industrial structure changed from agriculture to manufacturing and services. In 1990, although Vietnam was among the poorest countries in terms of GDP per capita, its status changed to a lower-middle-income country by the World Bank classification. The Vietnamese growth was driven not only by the Doi Moi policy, but also state-owned enterprises, foreign firms and private sector engagements (McCaig and Pavcnik 2013, 2-4).

This growth was mainly attributed to the large inflow of FDI. In 2008, the accumulative stock of FDI had been increasing. FDI, Official Development Assistance (ODA), private remittances, and portfolio investment were the main engines of Vietnam's growth. Ohno (2014, 246) described how Vietnamese growth was more quantitative than qualitative. Despite impressive growth records, the significant reform in the two decades was less impressive due to local firms remaining uncompetitive, and much of its manufacturing value was due to foreign firms, and policies and institutions remained very weak by East Asian standards.

To sum up, Vietnam became a member of the WTO in 2007 and began to implement the AFTA in regional agreements and East Asian (ASEAN-China, Korea, and Japan) FTAs. A latecomer like Vietnam is no longer able to adopt tariff walls and non-tariff barriers under economic globalization. For a latecomer like Vietnam to overcome the middle-income trap and reach the developmental stage, it has to adopt a fundamental policy. Latecomers like Cambodia, Laos, and Myanmar (CLM) will also face the same situation and issues. Hence, it is time for the preparation of a policy and strategy under regional arrangements.

4.3.4 The Malaysian Experience

From 1957, Malaysia transformed its economy from resource-based industry to a manufacturing-based one. During this period, growth was driven by FDI through MNEs, the manufacturing share of GDP increased, and Malaysia became one of the world's largest exporters of consumer and industrial electrical products in the global market (Ling 2006, 287). In the 1970s, Malaysia changed its economic policy from import substitution to an export-oriented strategy to attract FDI in the assembly and processing industries. Furthermore, the National Economic Policy (NEP) was adopted in 1969 for the five-year plan 1971-1975 (Ohno 2014, 220).

In the 1980s, under Prime Minister Mahathir's regime, Malaysia's industrial policies changed from a state-led to FDI-led strategy. A heavy industrialization program was implemented to promote export processing. The First Industrial Master Plan (IMP1) was launched for the period 1986-1995. In 1991, Mahathir launched Vision 2020 to become a fully developed nation. In this vision, Malay people would become the key to supporting industries. Hence, the second Industrial Master Plan (IMP2) 1996-2005 was launched under the ideas of cluster-based industrial development and the Manufacturing++ (manufacturing-plus-plus) program. The Third Industrial Master Plan (IMP3) 2006-2020 aims to develop services, especially high-value and industry-supporting services. The emphasis is on creating value-added technology, knowledge, and human resources. The IMP3 is a long-term vision for 15 years to develop key industries (Felker 2001, 134-136).

To summarize, the Malaysian government has implemented an industrial master plan, SME promotion and FDI attraction as its strategy. In the 2000s, the Malaysian economy is focusing on Information Technology (IT) and the knowledge economy to achieve national development.

4.3.5 Summary of the Comparative Study of Industrial Policies

As shown in Table 4-2, the CMV started market economy initiatives at the same time, around the mid-1980s. Only Malaysia switched from import substitution to an export-oriented strategy in the early 1970s. There are many similarities in industrial policies in CMV in the 1960s. Myanmar adopted an import substitution strategy until the mid-1980s. In the meantime, Cambodia and Vietnam also adopted an import substitution strategy. Cambodia, Myanmar, and Vietnam started to adopt a market economy around the mid-1980s. However, the development of these countries is different. Among CMV, Vietnam's rate of industrialization was high due to export diversifications. In the 1990s, while Vietnam improved its exports, Cambodia and Myanmar depended on single export items. Malaysia's industrial policy is currently focusing on heavy industry (the automobile and IT industries), so it is different from CMV and ahead of those countries.

To sum up a comparative study of industrial policies selected from ASEAN members, Cambodia's economic growth was due to the boom in garment exports to the EU and US markets, and most garment exports were led by FDI and foreign firms. Although CMV adopted their market-oriented economies at the same time, Myanmar lags behind its fellow ASEAN members. The reason is due to political issues, a lack of macroeconomic policy, and poor infrastructure. Among CMV, Vietnam's rate of industrialization is very close to that of the original ASEAN members.

Table 4-2 Summary of Industrial Policies among Cambodia, Vietnam, Malaysia, and Myanmar

Country	1960s	1970s-1980s	Mid-1980s	1990s	2000s	Summary of Industrial Policies
Myanmar	Socialism IS Strategy	Isolationism IS Strategy	Market-oriented Strategy Primary-based Industry	Agro-based Industry Labor-intensive Industry	Resource-based Industry Labor-intensive Industry SEZ & EPZ	1. Open economy in the 1980s 2. FTA in the 1990s 3. A resource-based Industry
Vietnam	Civil War IS Strategy	Socialism IS Strategy	<i>Doi Moi</i> (Renovation Policy)	Upgrading Manufacturing	Diversified Export Items	1. Open economy in the 1980s 2. FTA in the 1990s 3. Export-oriented Strategy
Cambodia	Civil War IS Strategy	Socialism Export Promotion	Market-based Economy	Privatization (SOEs)	Labor-intensive in Manufacturing SEZ & EPZ	1. Open economy in the 1980s 2. FTA in the 1990s 3. A Single Industry
Malaysia	Laissez- faire IS Strategy	Market-based & Export Orientation	Market Economy Heavy Industry	Global Trade Industrial Masterplan Heavy Industry	IT Revolution New Economic Model SMEs Masterplan	1. Export-oriented Strategy in the 1970s 2. FTA in the 1990s 3. IT, New Economic Model

Note: Import Substitution (IS), State-owned Enterprises (SOE), Small and Medium-sized Enterprise (SME), Special Economic Zone (SEZ), Export Processing Zone (EPZ), and Information Technology (IT)

Source: Compiled by Author

4.4 Research Methodology and Framework

In this study, the general-equilibrium multi-country multi-sector model developed by Hertel (1997) is used as a tool for examining the impact of trade liberalization under regional trade agreements. By using the GTAP model developed by Hertel (1997), the study incorporates tariff reduction under the RTA. In the GTAP analysis, the macroeconomic and welfare effects on Myanmar will first be examined. Moreover, the sectoral output, change in export and import bundles, and Myanmar's trade direction will be further examined under the RTAs such as the AFTA, EAFTA, and ASEAN Plus China, Japan, and Korea. Afterward, the strategic plan for Myanmar's industrial policy is examined through the simulation of improving capital and technology in the industrial output of these industries. Finally, in order to support and elaborate on Myanmar's National Economic Plan, the industrial promotion in Myanmar's industries is chosen as a policy tool for simulations in the GTAP model. The industries are agriculture, fishery, forestry, mining, textiles, and food and beverages. The standard GTAP model, parameters and closures in the GTAP 9 version by Hertel are used as the benchmark for policy simulation in the study.

4.4.1 Global Trade Analysis Project (GTAP) Version 9 Database

The Computable General Equilibrium (CGE) model is used widely in the analysis of regional trade agreements and trade policy, particularly for welfare impact analysis of member countries. The GTAP model² is a multi-sector, multi-country computable general equilibrium (Hertel 1997). The latest version, GTAP 9, has 140 regions and 57 sectors. In the current

² See Hertel (1997) for the project, its research network and modeling structure at the webpage <https://www.gtap.agecon.purdue.edu/models>

analysis, 140 regions are aggregated into 16 regions, and 57 sectors are mapped into ten sectors. The individual ASEAN members are singled out, while the remaining Southeast Asian countries (Myanmar and Timor-Leste) are designated as Myanmar³ (Holst and Ni 2008). Other East Asian countries are Japan, China, and Korea, with whom Myanmar has a potential for FTAs and other prospective FTA members. The remaining countries and regions are included in the Rest of World region. The scenarios are modeled based on tariff reductions which will be fully implemented in 2015 for AFTA and 2020 for EAFTA respectively.

Table 4-3 Aggregated Region in the GTAP Model

New Region	Comprising Regions
1. Cambodia	Cambodia
2. Laos	Laos
3. Myanmar	Myanmar with Timor-Leste
4. Vietnam	Vietnam
5. Brunei	Brunei
6. Indonesia	Indonesia
7. Malaysia	Malaysia
8. Philippine	Philippine
9. Singapore	Singapore
10. Thailand	Thailand
11. China	China
12. South Korea	South Korea
13. Japan	Japan
14. USA	USA
15. EU	EU-25
16. ROW	Rest of the World

Source: GTAP 9 Database

³ See Myanmar database at the webpage <https://www.gtap.agecon.purdue.edu/resources/res>

Table 4-4 Sector Aggregation

Sr. No	Sector	Code	Coverage of Commodities
1	Agriculture	AGR	Paddy rice, wheat, grains, non-grain crops, wool, and livestock
2	Forestry	FOR	Forestry
3	Fishery	FHS	Fishery
4	Mining	MIN	Oil, gas, coal, minerals
5	Foods & Beverages	PFD	Meat products, milk products, processed rice, other food products, beverages and tobacco
6	Textiles	TEXT	Textiles and clothing
7	Other Manufacturing	MANU	Wood products, paper products, petroleum, coal products, chemical, rubber, plastic products, mineral products, ferrous metals, metal products, transport equipment, machinery and other equipment, other manufacturing
8	Construction	CNS	Construction
9	Trade	TRD	Trade
10	Services	SVCS	Transport, other services (private and government)

Source: GTAP 9 Database

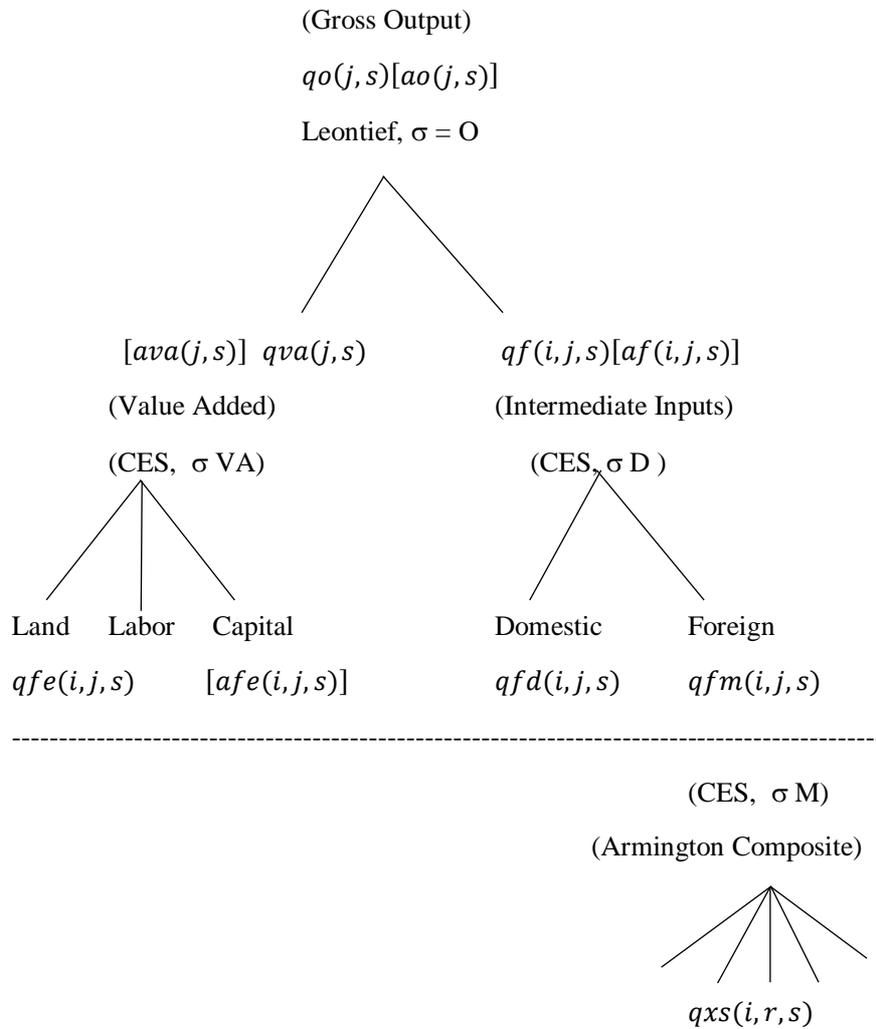
In the latest version of the database, as Myanmar is composite data in the rest of Southeast Asia with Timor-Leste, the rest of Southeast Asia (XSE) is assigned as Myanmar in the analysis. Hence, XSE is designated as Myanmar in the GTAP 9 2011 database. Since the Timor-Leste economy is small, its economy is ignored in the simulation. The rest of the Southeast Asian economy is assumed for analyzing the economy of Myanmar. The study uses Myanmar to stand for the rest of Southeast Asia in drawing implications for policy simulations (A comparison of the economies of Myanmar and Timor-Leste is provided in Appendix 4-1).

4.4.2 Basic Structure of the Model and Assumptions

There are three basic structures in the GTAP model: industrial sectors, households, and governments. The primary factors of production in the model are land, labor, and capital. In this model simulation, labor is assumed to move across industries but not countries, while

capital is assumed to be mobile across industries and countries. Land is assumed to be used only in agricultural sectors.

Figure 4-1 Production Structure of the GTAP Model



Source: Adapted from Hertel (1997)

The economic agents are each country/region, producers, private households, and government. In the GTAP model, private households and government are economic agents as regional households. Regional expenditures are the sum of private households and government. By supplying the factors of production (land, labor, and capital) to producers, regional households obtain factor incomes from producers (Hertel and Tsigas 1997, 27).

The gross production function in the GTAP model has the structure shown in Figure 4-1. It is also known as the technology tree. On the production of value-added nest, firms use primary inputs (land, labor, and capital). This quantity is denoted in percentage change form, (qfe). Firms also purchase intermediate inputs which are produced domestically, (qfd), and which are imported, (qfm). Therefore, firms import the intermediate inputs from exporters, $qxs(i, r, s)$. This sourcing occurs at the border, the dashed line between the firms' production tree and the constant elasticity of substitution (CES) nest combining bilateral imports. These intermediate inputs flow from the variety of region (qxs) in the Armington assumption (Hertel and Tsigas 1997, 10-73).

The tariff structure is shown in the following equation.

$$pms(i, r, s) = tm(i, s) + tms(i, r, s) + pcif(i, r, s) \quad \text{Equation 4-1}$$

Equation 4-1 shows that changing the import tariff will affect the domestic market price for tradable commodity i in regions r . Change in the border price of the product, $pcif(i, r, s)$, or two types of border interventions will affect that product as well. Both are ad valorem import tariffs. The first, $tm(i, s)$, intends to establish some domestic price changes while the second, $tms(i, r, s)$, is bilateral in nature. A reduction of the bilateral tariff imports of i from r into s , $tms(i, r, s)$, will create the lowers $pms(i, r, s)$ via a price linkage Equation 4-1.

In order to conduct the FDI simulation exercise, I follows a paper by Otsubo (2005) on the computational analysis of the economic impacts of Japan's FDI in Asia. I selected the following set up for FDI simulations: exogenous saving rate, free international capital flows (RORDELTA = 1), and no reflection of investment changes on the shocked/adjusted capital stock endowments (EXPAND = 1 or inoperative). Parameters/variables operated in the simulation are: $qo(\text{capital})$ for designated sectors, and ao (technology) in production representing a Hick neutral technology improvement (Otsubo 2005, 12-13). By changing

capital and technology variables, it will move to a new equilibrium situation in output function by Equation 4-2.

The output function is shown in the following equation:

$$QO_{jr} = e^{ao_{jr}t} \min(QVA_{jr}e^{ava_{jr}t}, QF_{ijr}e^{af_{jr}t}) \quad \text{Equation 4-2}$$

where

QO_{jr} = industry output of commodity j in region r ,

QVA_{jr} = value-added in industry j in region r ,

QF_{ijr} = demand for intermediate input commodity i for use in industry j in region r ,

ao_{jr} , ava_{jr} , and af_{ijr} = the parameters of technical change.

In the general equilibrium model by Hertel (1997), changing tariff rate, parameters, and closure will affect the production and consumption pattern, and move toward a new equilibrium level.

In this study, a policy shock on trade is conducted by using a tariff to examine the static equilibrium. In order to understand capital improvement and technology effect, external shock through movements in qo (capital) and technology transfers are further examined. In the GTAP model, three types of technical change can be used for policy simulation: ao (output augmenting technical change), av (value added technical change), and afe (intermediate input augmenting technical change). As the study intends to analyze capital augmentation with a technical change in the simulation of FDI, capital (qo) is augmented in this study. For technology transfer, output augmenting technical change (ao) is conducted in this study.

4.4.3 Policy Simulation Scenarios

The simulation design in this study has three policy packages: regional trade agreements, a preferential treatment and the industrial policy promotion for Myanmar, and combined trade and FDI policies.

4.4.4 Simulating the Impact of Regional Trade Agreements

In the first set of simulations, the following question will be answered: Is there any welfare gain for Myanmar by joining regional trade agreements?

The first simulation examines Myanmar's import tariff reduction under AFTA. The rate of tariff reduction is simulated by the commitments of Myanmar under the AFTA scheme. Therefore, the target tariff rate of Myanmar's liberalization of zero percent is employed in the simulation with the AFTA, the EAFTA, and ASEAN Plus One. This result shows the situation of Myanmar's economy with the FTA scheme complete in 2015 for AFTA and 2020 for EAFTA.

From the first simulation, the study estimates whether Myanmar enjoys welfare gains from the AFTA or not. If not, a latecomer like Myanmar may ask for favored treatment for protection of infant industries in the ASEAN context. Although protectionism and trade barriers are not allowed in regional integration and under WTO rules, latecomers will ask for protection of domestic infant industries. Therefore, in this section, policy simulations are conducted under the RTAs S0 through S7.

4.4.5 Simulating Impacts of Preferential Treatments and Industrial Promotion for Myanmar

In the second set of simulation exercises, the following question will be answered: Is membership in the AFTA beneficial for Myanmar?

The second simulation group focuses on a preferential treatment for Myanmar in the protection of some infant industries. Moreover, further simulations will be conducted on the role of capital accumulation and technology transfers into the Myanmar industries. The economic development gap between original ASEAN members and latecomers is very high, hence, latecomers need to adjust their level to compete under regional trade agreements. I assume that the production and output of latecomers should be upgraded in the regional context. Therefore, in this simulation (S8), Myanmar asks for protection of some infant industries.

Furthermore, due to domestic/regional policy changes for FDI, qo (capital) moves from China, Japan, Korea, and Thailand into Myanmar by the amount equivalent to 1 percent of Myanmar's original capital endowment in simulation 9. Afterward, technology transfers are assumed to increase by 1 percent in the designated industries of Myanmar (agriculture, fishery, forestry, mining, foods and beverages, and textiles) in the simulation 10. I assume the parameter (ao) output augmenting technical change by 1 percent in these industries. Therefore, in order to know how the transfer of technology has effects in this study, the technical change parameter (ao) is augmented in these industries. The selected industries are a part of the strategic industrial policy of Myanmar's National Comprehensive Development Plan (NCDP) in the period 2011-2031. Therefore, I assume these parameters increase in output by 1 percent in the GTAP simulation.

Experiments on preferential treatments and industrial promotion for Myanmar are conducted under S8 through S11:

1. Myanmar keeping protections four industries (agriculture, fishery, textiles, and foods & beverages) against ASEAN members while the ASEAN-6 liberalizes import tariffs for all sectors for Myanmar

2. Due to domestic/regional policy changes for FDI, qo (capital) moves from China, Japan, Korea, and Thailand into Myanmar by the amount equivalent to 1 percent of Myanmar's original capital endowment.

In the simulation of technology transfer, the rate of technology parameter⁴ (ao) in the gross output function is conducted for technology transfer in Myanmar's industries (agriculture, fishery, forestry, mining, foods and beverages, and textiles). Therefore, I assume technology transfers into Myanmar's industries at 1 percent.

From the result of the second set of simulations, we can identify whether technology transfers are essential for latecomers like Myanmar. Therefore, I proceed in the next simulation design for the industries under the following simulation exercise. Based on a comparative study selected from ASEAN members, I proceed to an industrial policy of combined trade and FDI policies (East Asian Growth Model). Therefore, the simulation design will be conducted for industrial policy simulations in S12 and S13.

4.4.6 Simulating Impacts of Combined Trade and FDI Policies (East Asian Growth Model)

Finally, the issue will be addressed by the following question: Which policy will make Myanmar achieve industrialization?

Lastly, I observe industrial policies selected from ASEAN members' experiences in achieving industrialization. Malaysia attracting FDI to some key industries can be a policy guideline for Myanmar in these simulations. In the early stage of industrialization, Malaysia attracted FDI to catch up to East Asian nations, while Cambodia attracting FDI in the garment sector and Vietnam attracting FDI in export-led industries will be observed. Therefore, I choose

⁴ See Equation 4-2

an appropriate policy from these countries' experiences to apply to Myanmar's industries by the simulation of Myanmar's industrial policy in S12 and S13. Table 4-5 shows the summary of simulation design in the study.

Table 4-5 Simulation Design for Myanmar under the RTAs and Industrial Promotion Policies

Code	Name of Simulation	Details of Simulations
1. Simulation Design for Regional Trade Agreements		
S0	UL-Global	Unilateral liberalization by Myanmar to the global economy
S1	UL-ASEAN6	Unilateral liberalization by Myanmar against ASEAN-6
S2	ASEAN6-UL	Unilateral liberalization by ASEAN-6 against Myanmar
S3	AFTA	Myanmar and ASEAN Free Trade Area
S4	EAFTA	Myanmar and East Asia Free Trade Area (ASEAN+3)
S5	ASEAN-China	Myanmar and ASEAN Plus China Free Trade Agreement
S6	ASEAN-Japan	Myanmar and ASEAN Plus Japan Free Trade Agreement
S7	ASEAN-Korea	Myanmar and ASEAN Plus Korea Free Trade Agreement
2. Simulation Design for Preferential Treatments and Industrial Promotion for Myanmar		
S8	Preferential Trade Policy	Myanmar keeping protections in four industries (agriculture, fishery, textiles, and foods & beverages) against ASEAN members while the ASEAN-6 liberalizes import tariff for all sectors for Myanmar
S9	Transfer of Capital Stock	Due to domestic/regional policy changes for FDI, <i>qo</i> (capital) moves from China, Japan, Korea, and Thailand into Myanmar by the amount equivalent to 1 % of Myanmar's original capital endowment
S10	Technology Transfer	Due to technology transfer to Myanmar's industries (agriculture, fishery, forestry, mining, foods & beverages, and textile), productivity (<i>ao</i>) improves by 1 % in these industries
S11	Transfer of Capital stock and Technology (FDI)	Combination of cross-border transfer of capital and technology (composite FDI impact) to Myanmar (S9+S10)
3. Simulation Design for Combined Trade and FDI Policies (East Asian Growth Model)		
S12	FDI Induction and Full UL	FDI induction and full unilateral trade liberalization (all sectors, to global economy) by Myanmar (S11 + S0)
S13	EAFTA FDI and Trade Integration	FDI induction by Myanmar and East Asian economic integration (EAFTA) (S11 + S4)

Simulations will be conducted in the following areas, S12 and S13.

1. FDI induction and full unilateral trade liberalization (all sectors, to the global economy) by Myanmar
2. FDI induction by Myanmar and East Asian economic integration (EAFTA).

To sum up the policy scenarios, I simulate static trade liberalization by reduction of import tariffs in the standard GTAP model. To examine a static replication of more dynamic impacts of capital accumulation and technology transfers, I apply the transfer of capital and technology to Myanmar's industries.

4.5 Results and Findings

In this study, I examine import tariff reduction under regional trade agreements. The rate of tariff reduction is simulated by the commitments of Myanmar under the AFTA scheme. Then the study posits a preferential treatment for Myanmar through protection in some infant industries. Finally, a comparative study of industrial policies selected from ASEAN members is conducted to draw policy implications for Myanmar's industrial promotions.

Under the simulation exercises, I show the proper initiatives in broader policies such as unilateral liberalization, AFTA, EAFTA, ASEAN Plus One, with China, Japan, and Korea, and which policies should be avoided. The simulations conducted in this study are; i) unilateral liberalization in a narrow group and wider group; ii) liberalization with and without reciprocation; and iii) the validity of an old industrial policy of protecting target industries. Among the results, a clear negative answer is found under the old industrial policy of protecting the target industries. Furthermore, the relative impacts of trade and FDI integrations are also tested, reflecting the fact that current economic integration is mostly propelled by FDI networks. The importance of technology absorption is also clearly tested and proven.

To summarize, the original and key findings in this study are i) attracting FDI into the Myanmar industries with technology transfers, and ii) trade protection should be avoided, and the economy's endogenous reaction should be preserved. Therefore, these original findings are produced by conducting policy simulations in a well-designed sequential manner under regional trade agreements (S0-S7), a preferential treatment and industrial promotion (S8-S11), and combined trade and FDI policies (East Asian Growth Model) under S12 and S13. Detailed results and findings are presented in the following sections.

4.5.1 Welfare Implications for Myanmar under Regional Trade Agreements

Table 4-6 shows that under regional trade agreements Myanmar loses welfare under unilateral liberalization by Myanmar to ASEAN (S1) and AFTA (S3).

Table 4-6 Welfare Implication for Myanmar under Regional Trade Agreements

Country/Region	S0	S1	S2	S3	S4	S5	S6	S7
Cambodia	-0.33	-0.86	0.01	-0.90	-0.46	-0.59	-0.80	-0.88
Laos	-0.13	-0.58	-0.01	-0.56	-0.13	-0.25	-0.48	-0.52
Myanmar	15.10	-36.10	18.90	-16.60	158.00	54.00	25.10	45.90
Viet Nam	-4.56	-2.54	-0.44	1.79	-8.00	-3.52	0.63	-1.54
Brunei	-0.18	-0.12	0.00	-0.12	-0.27	-0.12	-0.18	-0.21
Indonesia	-7.36	-0.33	-0.27	-0.68	-8.21	-4.10	-3.04	-2.44
Malaysia	-8.04	-1.74	-0.46	-2.26	-6.75	-5.14	-3.77	-2.34
Philippines	-0.91	-0.42	0.50	0.03	-1.36	-0.29	-0.38	-0.62
Singapore	7.97	16.00	-0.13	15.90	8.29	10.90	13.60	15.50
Thailand	18.60	83.60	1.62	84.80	33.00	47.40	72.20	83.10
China	23.00	-27.20	-3.81	-32.30	2.81	80.90	-73.50	-69.10
Japan	54.20	-4.84	-0.35	-5.60	44.90	-21.20	61.60	-6.75
Korea	12.50	-2.50	-0.44	-3.10	36.80	-19.40	-9.87	59.80
USA	-7.31	0.37	-1.12	-1.65	-22.80	-18.50	-1.89	-5.67
EU	7.84	-0.62	-1.04	-2.39	-14.80	-11.50	-2.88	-5.18
ROW	-62.80	-17.10	-7.69	-25.80	-155.00	-82.00	-59.80	-64.60
Total	47.50	5.03	5.28	10.50	66.40	26.50	16.50	44.50

Source: Author's calculation based on the policy simulations using the GTAP 9 Database

Under these two simulations, Myanmar experiences a welfare loss of 36.10 million US dollars under S1 and 16.60 million US dollars under S3. In trade theory, trade liberalization increases welfare for member countries against welfare loss of non-members under the formation of a customs union. Here the case of Myanmar is exceptional. The reason is, as the RTAs are happening, Myanmar is forced to import goods from ASEAN members rather than from non-ASEAN members. This creates a higher price for imports and distortion in Myanmar's terms of trade and increased welfare loss. A similar preliminary simulation for Lao PDR conducted by the author also showed the same result as Myanmar in welfare loss. According to Viner (1950), only the larger areas of a customs union will experience positive effects for members. Hence, this study confirms that small economies like Cambodia, Laos, and Myanmar (CLM) with limited markets and diversified exports face welfare loss under regional trade agreements. Welfare gain in other simulations implies that as Myanmar opens its trade to more members and extends to the EAFTA and international groups (the global market), it enjoys more welfare than under the AFTA. The welfare gain is high in the case of EAFTA. Under this simulation (S4), Myanmar's welfare increases by 158 million US dollars. Welfare gain also improves when extending regional trade agreements with China, Japan, and Korea respectively.

4.5.2 Myanmar's Trade Volume under Regional Trade Agreements (RTAs)

The effect of trade creation and trade diversion on Myanmar is discussed in the following section.

Table 4-7 shows Myanmar's bilateral trade volume under regional trade agreements. In Table 4-7, Myanmar's export volume increases with countries such as Thailand (39.1 million US dollars), China (35.9 million US dollars), Japan (96 million US dollars), Korea (57.1 million US dollars), and the EU (56 million US dollars) under S0. As Myanmar undertakes unilateral

liberalization, import volume substantially increases more than export volume with nations such as Singapore (37.8 million US dollars), Thailand (55.9 million US dollars), China (260 million US dollars), and Japan (248 million US dollars). Under S0, Myanmar's export direction is mainly to Japan, Korea, the EU, Thailand, and China.

Table 4-7 Myanmar's Trade Volume with East Asian Members and Prospective Future Members (In Millions of US dollars)

	Trade	KHA	LAO	VNM	BRN	IDN	MYS	PHL	SGP	THA	CHN	JPN	KOR	USA	EU
S0	Export	0.0	0.0	-0.3	0.0	-0.8	4.0	-0.3	1.2	39.1	35.9	96.0	57.1	2.7	56.0
	Import	0.0	0.0	-2.1	0.0	-20.0	-34.4	-0.7	37.8	55.9	260.0	248.0	9.6	7.6	2.3
S1	Export	0.0	0.0	1.4	0.0	1.7	5.7	0.7	1.6	11.2	34.8	19.2	9.5	2.5	12.9
	Import	0.0	0.0	-3.7	0.0	14.0	4.9	1.0	90.0	377.0	-204.0	-25.4	-27.9	-6.6	-13.9
S2	Export	0.0	0.0	-0.8	0.1	0.5	1.6	4.1	-0.7	52.8	-12.5	-5.8	-2.6	-0.9	-4.0
	Import	0.0	0.0	0.1	0.0	1.1	2.2	0.0	0.8	5.2	4.0	0.5	0.6	0.9	1.4
S3	Export	0.1	0.1	4.0	0.1	2.2	7.1	4.8	0.9	64.0	21.9	13.4	6.9	1.6	8.9
	Import	0.0	0.1	11.1	0.0	14.9	6.9	1.0	90.5	380.0	-206.0	-25.5	-28.2	-5.8	-12.7
S4	Export	0.0	0.1	-2.6	0.0	-6.2	-10.5	1.6	-4.0	69.6	50.9	74.2	217.0	-5.1	18.7
	Import	0.0	0.0	0.5	0.0	-5.1	-8.4	-0.3	52.3	145.0	412.0	267.0	33.6	-8.7	-30.4
S5	Export	0.1	0.1	1.0	0.0	-1.4	-0.4	3.4	-1.2	66.7	101.0	49.4	31.6	-1.3	25.8
	Import	0.0	0.0	3.5	0.0	-2.9	-10.6	0.1	63.1	203.0	602.0	-84.3	-110.0	-9.6	-28.0
S6	Export	0.1	0.1	3.1	0.1	0.8	4.8	4.3	0.2	69.8	14.0	44.4	7.5	0.9	8.2
	Import	0.0	0.0	8.5	0.0	11.0	3.6	0.6	79.2	322.0	-358.0	329.0	-49.9	-7.6	-18.8
S7	Export	0.1	0.1	1.4	0.0	-1.2	-0.7	3.5	-1.3	61.1	-20.4	7.3	192.0	-1.5	2.6
	Import	0.0	0.1	10.6	0.0	16.6	12.3	1.0	90.9	379.0	-243.0	-29.5	137.0	-3.0	-9.1

Source: Author's calculation based on the policy simulations using the GTAP 9 Database

Under S1, Myanmar's unilateral liberalization to ASEAN, Myanmar imports mainly from Thailand (377 million US dollars), followed by Singapore (90 million US dollars), Indonesia (14 million US dollars), and Malaysia (4.9 million US dollars). The trade relationship between Cambodia, Laos, Vietnam, Brunei, and the Philippines does not develop yet. Myanmar's export direction is mainly to Japan, China, Thailand, Korea, the US, and the EU. Under S2, unilateral liberalization of ASEAN to Myanmar, trade volume is very limited between them. Myanmar's exports only go to Thailand (52.8 million US dollars).

Under S3, AFTA, due to trade creation and diversion effect, Myanmar imports more from its fellow members, making import prices higher, and imports large volume from ASEAN members. The trade relation with China shrinks by 206 million US dollars, while Myanmar imports more from Thailand (380 million US dollars). It creates negative terms of trade and causes Myanmar welfare loss. Myanmar is forced to import higher priced imports from its ASEAN partners, and it loses in welfare as a result.

Under S4, EAFTA, Myanmar's exports expand to Japan, China, Korea, and the EU. Myanmar mainly imports from China (412 million US dollars), Japan (267 million US dollars), Thailand (145 million US dollars), Singapore (52.3 million US dollars), and Korea (33.6 million US dollars) respectively. Under the simulation of ASEAN Plus One (S5, S6, and S7), welfare gain for Myanmar is high and the trade relationship is extended to its fellow ASEAN members.

Under the RTAs, when observing trade relationships between Cambodia, Laos, and Vietnam (CLV) and Myanmar, it seems very limited, as Myanmar and ASEAN latecomers do not trade with each other yet. Since Myanmar's trade relationships are very close to Thailand, Singapore, Japan, China, and Korea, the impacts of trade liberalization also affect these countries under the RTAs.

In the following sections, the RTAs, a preferential treatment and industrial promotions for Myanmar, and combined trade and FDI policies will be analyzed through macroeconomic impacts.

4.5.3 Macroeconomic Impacts on Myanmar

Table 4-8 shows the macroeconomic impact on Myanmar. The policy simulation for Myanmar is shown in the table. The source of welfare impacts is also observed for Myanmar. In the GTAP model, there are three determining factors of equivalent variation: allocation efficiency, terms of trade effects, and investment-saving effects.

As trade liberalizes, Myanmar's GDP shows progress. In terms of trade, it has a negative impact on Myanmar under unilateral liberalization to the global market (S0), ASEAN (S1), AFTA (S3), and ASEAN Plus Japan (S6). Regarding allocation efficiency, it improves and makes welfare increase. Myanmar maximizes welfare gain under the EAFTA (S4), better than under the AFTA (S3). This situation may motivate Myanmar to move from an ASEAN-based smaller regional trade agreement to the wider EAFTA-based agreement. That gives Myanmar a better position in EAFTA, as Myanmar's welfare gain is higher in EAFTA than AFTA.

Table 4-8 Macroeconomic Impact on Myanmar

	GDP Quantity Index	Terms of Trade	Equivalent Variation (EV) Welfare (Million US \$)	EV due to Allocation Efficiency	EV due to Terms of Trade
1.	Simulation Design for Regional Trade Agreements				
S0	66.90	-0.41	15.10	66.90	-37.40
S1	6.62	-0.27	-36.10	6.62	-24.90
S2	0.82	0.12	18.90	0.82	11.00
S3	7.37	-0.15	-16.60	7.37	-13.60
S4	76.09	0.49	158.00	76.10	44.80
S5	38.37	0.07	54.00	38.40	6.29
S6	34.33	-0.05	25.10	34.30	-4.85
S7	18.13	0.18	45.90	18.10	16.20
2.	Simulation Design for Preferential Treatments and Industrial Promotion for Myanmar				
S8	-0.79	0.09	11.00	-0.79	7.95
S9	210.61	-0.01	51.14	14.37	-49.25
S10	636.01	0.01	749.17	27.93	66.57
S11	846.63	0.00	800.44	42.30	17.43
3.	Simulation Design for Combined Trade and FDI Policies (East Asian Growth Model)				
S12	913.54	0.00	815.49	109.21	-19.95
S13	922.71	0.01	958.45	118.38	62.16

Source: Author's calculation based on the policy simulations using the GTAP 9 Database

Under the protection of some infant industries in Myanmar (S8), it causes Myanmar to misallocate resources. Although Myanmar enjoys welfare gain by 11 million US dollars and

favorable terms of trade by 7.95 million US dollars, the allocation efficiency shows a negative sign (-0.79). It seems Myanmar moves its efficient resources from the textile industry to other disadvantaged industries. (Detailed impacts are shown in the industrial output section).

Under the transfer of capital stock into Myanmar (S9) welfare gains of 51.14 million US dollars are observed. EV change due to allocation efficiency also increases by 14.37 million US dollars. However, terms of trade will show a negative sign due to capital improvement and more FDI. As with the transferring of capital by foreign firms, terms of trade will show negative as more intermediate inputs such as capital goods are imported. Myanmar imports more capital goods with higher prices, and this causes terms of trade to show a negative sign. It shows negative terms of trade of 49.25 million US dollars. Under the technology transfer (S10), the impact of welfare (749.17 million US dollars) is higher than the transfer of the capital stock.

Under simulation 11, in order to examine how technology effects are critical in Myanmar's industries, I apply the combination of cross-border transfer of capital and technology (composite FDI impact) to Myanmar. This simulation shows a favorable situation for Myanmar in promoting FDI with technology transfers. The result shows 800.44 million US dollars under this policy simulation.

Under the combined trade and FDI policies (East Asian Growth Model), welfare gain here is the highest figure among policy simulations. Welfare gain is 815.49 million US dollars under S12 and 958.45 million US dollars under S13. With the combined trade and FDI policies, EV change due to terms of trade and allocation efficiency is significant. All have positive signs for terms of trade and allocation efficiency.

The results confirm how technology is essential for Myanmar to improve terms of trade in the assessment of welfare gain. To compete with ASEAN members, Myanmar needs to

upgrade the current condition of its industries to be more sophisticated in regional trade agreements.

4.5.4 Impact on Myanmar's Industrial Output

Table 4-9 shows the impact on Myanmar's industrial output volume change through the RTAs, preferential treatments and the industrial promotions, and combined trade and FDI policies.

Under S0, Myanmar's unilateral liberalization to the global economy, Myanmar enjoys expanded outputs to the world in mining and textiles. Under S1, unilateral liberalization to ASEAN, Myanmar's output expands in forestry, mining, and textiles. However, the textile market contracts from 9.77 under S0 to 1.79 under S1. With ASEAN's unilateral liberalization to Myanmar (S2), only agriculture and fishery slightly expand, and textiles shrink (-0.47). Under the AFTA (S3), forestry, mining, and textiles expand. Under the EAFTA (S4), Myanmar's textiles (12.23) expands significantly.

In Table 4-9, under ASEAN Plus One, fishery, mining, and textiles improve, while agriculture, forestry, and other manufacturing shrink under ASEAN Plus China. With ASEAN Plus Japan, Myanmar's output expands in agriculture, fishery, mining, and textiles, while output shrinks in forestry, food and beverage, and other manufacturing. With ASEAN Plus Korea, agriculture, mining, and textiles expand, while the remaining industries shrink.

With protection in four industries, under S8, Myanmar's output shrinks in the industrial sectors such as textiles, and food and beverages. Only agriculture, fishery, and mining expand. The reason might be the misallocation of resources from textiles to other industries and policy adoption in protection, which makes Myanmar lose its textile output (-0.43), forestry (-0.25), food and beverages (-0.03), and other manufacturing (-0.67). Only agriculture, fishery, and mining develop.

Table 4-9 Impact on the Industrial Output of Myanmar under RTAs, Preferential Treatments, and Combined Trade and FDI Policies (Change in %)

Sector	Share in GDP (%)	S0	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
Agriculture	23.69	-0.06	-0.03	0.03	0.00	0.01	-0.05	0.02	0.05	0.04	0.10	0.81	0.91	0.85	0.93
Fishery	5.26	-0.03	-0.18	0.07	-0.10	0.18	0.05	0.01	-0.08	0.11	-0.01	0.99	0.98	0.96	1.16
Forestry	1.90	-0.62	0.46	-0.21	0.24	-2.62	-1.18	-0.18	-0.79	-0.25	1.82	-1.84	-0.02	-0.64	-2.64
Mining	3.86	0.74	0.30	-0.05	0.25	0.22	0.33	0.33	0.07	0.15	0.39	0.68	1.07	1.81	1.29
Food & Beverages	24.49	-0.62	-0.39	-0.02	-0.41	-0.50	-0.57	-0.32	-0.44	-0.03	0.20	1.41	1.61	0.99	1.11
Textiles	1.69	9.77	1.79	-0.47	1.35	12.23	5.19	1.34	8.41	-0.43	3.68	-1.30	2.39	12.16	14.62
Other Manufacturing	5.63	-2.64	0.51	-0.11	0.38	-3.88	-0.97	-0.72	-1.44	-0.67	3.43	-5.74	-2.32	-4.96	-6.19
Construction	6.43	2.04	0.37	-0.03	0.34	2.48	1.86	0.64	0.67	0.20	-1.04	3.48	2.44	4.48	4.92
Trading	6.63	0.33	0.08	-0.01	0.06	0.39	0.31	0.11	0.09	0.02	0.30	0.94	1.24	1.57	1.63
Services	20.42	0.02	-0.01	0.02	0.01	0.07	0.02	0.07	0.01	0.04	0.45	0.59	1.04	1.06	1.11

Source: Author's calculation based on the policy simulations using the GTAP 9 Database

Under the simulations of capital augmentation (S9), Myanmar's output almost expands in all sectors. With the technology transfer (S10), almost all output expands. Under S11, the combination of FDI and technology transfers, almost all output expands significantly. All output expands proportionately under S11. Under combined trade and FDI policies (S12 and S13), not only is welfare gain high but the industrial outputs of Myanmar also expand significantly. Textiles increase greatly under these simulations.

To summarize, Table 4-10 has clearly shown the transferring of q_0 (capital) distributed proportionally among the industrial sectors. Under the S9, S11, S12, and S13, increasing one percent in the q_0 (capital) distributed the increased capital stock to its industrial structurers. Under the static effect of trade scenario, only agriculture, fishery, mining, and textiles improve. This result is due to the comparative advantage of Myanmar under regional trade agreements. This study confirms that capital accumulation (FDI) and improving productivity in output (technology) will help Myanmar to compete with ASEAN members in the future. Upgrading technology shows a substantial increase in almost all industrial outputs. It is shown that the traditional strategies of protecting target industries would fail. Myanmar should opt for more open, broader policies as an integral part of its industrial promotion. With the more open scheme, and utilizing regional trade agreements, Myanmar should attract FDI into industries with technological absorption. It also should let the intersectoral flow of productive resources freely happen while exposing sectors to trade competition. This should benefit the future discussion of industrial policies with freer movement of economic resources in the ASEAN and East Asian economies.

Table 4-10 Capital Endowment using in the Industries of Myanmar

Qfe (capital, i, Myanmar)	S0	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
Agriculture	-0.13	-0.07	0.07	0.01	0.03	-0.12	0.05	0.11	0.07	0.45	-0.42	0.03	-0.10	0.06
Fishery	-0.04	-0.25	0.11	-0.15	0.26	0.07	0.01	-0.12	0.11	0.03	-0.02	0.01	-0.03	0.27
Forestry	-0.68	0.50	-0.22	0.26	-2.84	-1.28	-0.19	-0.85	-0.23	2.07	-3.09	-1.03	-1.71	-3.87
Mining	3.25	1.31	-0.20	1.12	1.00	1.47	1.47	0.31	-0.21	1.81	-1.43	0.38	3.63	1.38
Food & Beverages	-0.62	-0.39	-0.01	-0.40	-0.48	-0.58	-0.30	-0.41	-0.01	0.58	0.40	0.98	0.36	0.50
Textiles	9.77	1.78	-0.45	1.36	12.25	5.17	1.36	8.44	-0.46	4.14	-2.30	1.83	11.60	14.09
Other manufacturing	-2.64	0.51	-0.10	0.38	-3.86	-0.98	-0.70	-1.41	-0.10	3.82	-5.75	-1.93	-4.57	-5.79
Construction	2.03	0.36	-0.02	0.35	2.51	1.83	0.67	0.71	-0.01	-0.45	3.45	3.00	5.04	5.51
Trading	0.33	0.07	0.01	0.08	0.41	0.28	0.14	0.14	0.01	0.90	0.90	1.80	2.13	2.21
Services	0.03	-0.01	0.04	0.03	0.13	0.02	0.11	0.06	0.04	1.17	0.71	1.88	1.91	2.01
qo (Capital)										1%		1%	1%	1%

Note: 1. S0-S7 is under regional trade agreements. (No change in qo).

2. S8 is under the protection policy

3. Technology transfer in Myanmar's industries is agriculture, fishery, forestry, mining, foods & beverages, and textile.

Source: Author's calculation based on the policy simulations using the GTAP 9 Database

4.6 Conclusion and Policy Implications

In this study, I analyzed the possible industrial policy for Myanmar to promote its industries under regional trade agreements, using the GTAP model for general-equilibrium policy simulations. The proposition of the study is to implement policy implications for Myanmar by using a comparative study of industrial policies selected from ASEAN members in the GTAP model.

The results show that Myanmar's welfare can be easily undermined due to adverse trade diversion effects if it seeks narrow RTAs only with ASEAN members. Moreover, Myanmar tends to secure positive welfare gains if the AFTA expand to include China, Japan, or Korea. Additionally, a protection policy does not lead Myanmar to enhance its trade volume and welfare. It creates the misallocation of resources among industries. Finally, capital and technology augmentation through regional FDIs, especially from the advanced East Asian countries such as Japan, Korea, and China, is essential for Myanmar to achieve industrialization. Improving technology in output (technology and technical spillover) of Myanmar's industries will produce a large advance in its industrial transformation, leading to sizable welfare gains.

Finally, this study provides practical policy implications, as follows. First, if Myanmar wishes to re-start its path to industrialization and economic development, it needs to use the frame of regional trade agreements like EAFTA and ASEAN Plus Japan, Korea, or China rather than the AFTA. EAFTA gives Myanmar better welfare gains than the AFTA. Second, given the role of capital stock (FDI) and technology transfers, improving technology in production process will create more welfare gain for Myanmar. A proactive industrial promotion policy is essential for Myanmar to achieve industrialization. Industrial promotion policies in a

comparatively advantaged sector (such as agriculture) should be promoted by more capital-intensive industry, meaning that agro-based industry is essential. Food and beverages also needs to be upgraded, as Myanmar is rich in these resources. Textiles (garments) are in the most favorable condition to upgrade, not only for competitiveness but also for job opportunities in the take-off period. Special economic zones and export processing zones can be the main strategy for Myanmar to attract FDIs, to absorb better production/management technology, and to gain market access. Lastly, a protection policy does not work under regional trade agreements, as it creates resource misallocation from the advantaged industries to the disadvantaged industries.

This analysis concludes and confirms that small economies like Cambodia, Laos, and Myanmar, with limited markets and less diversified exports, will face welfare loss under regional trade agreements. It means ASEAN latecomers need to prepare well for their industrial policies under regional trade agreements. It confirms for Myanmar that without capital stock (FDI), technology transfers, and a favorable and proactive policy, it will lose its welfare by joining the RTA. However, Myanmar's welfare gain is better in the EAFTA than the AFTA. Welfare gain is also high for all East Asian members under a wider and more comprehensive regional arrangements.

Appendix-4-1

A Comparison in the Economies of Myanmar and Timor-Leste

Key Indicator for Myanmar and Timor-Leste in 2014 database	Myanmar	Timor-Leste
Total population million; as of 1 October,	51.5	1.2
GDP, At Constant Prices, million US dollars	53,132.3	4,154.0
Structure of Output percent of GDP		
Agriculture	27.9	4.3
Industry	34.4	76.3
Services	37.7	19.4
Exports, fob	12,524	92.0
Imports, cif	16,633	985.0
Trade Balance	-4,110	-893.0
Trade million US dollars		
Exports, total	22,488.6	524.3
Imports, total	24,158.4	114.1

Source: Asian Development Bank (ADB)

Chapter 5: Reforms, Strategies, and Changing Industrial Structure of Myanmar since 2011

5.1 The Myanmar Reform under the Thein Sein Regime since 2011

In 2011, Myanmar undertook political and economic reforms under a civilian government. In the commitment, Myanmar will be a multiparty parliamentary democracy and a market-based economy focusing on socio-economic development, particularly education and health. Since his early days in office, President Thein Sein acknowledged the enormous political, economic, and social problems that Myanmar faces and that the government should focus on these issues. In his discourse, Myanmar needs to invest in physical and social infrastructure, especially education and health. To implement the economic reform, Myanmar has to pursue a strong growth-oriented development strategy based primarily on agriculture and natural resources. Moreover, development of other manufacturing industries should also be aimed at the domestic market and foreign markets. Finally, the importance of transparency, accountability, good governance, and the rule of law must be addressed. The other issues regarding corruption, cronyism, and a widening wealth gap should also be dealt with under the reform process (New Light of Myanmar 2011).

Hence, the Thein Sein government started a strategic plan under the Framework for Economic and Social Reforms (FESR) in 2011. In this reform, a number of short-term and a long-term development plans are identified. The government started the FESR in November 2012 in a draft and published it in January 2013. In the framework, it lays out reform priorities for the long-term goals. In the short-term plan of 2012-2015, the FESR aims to cover multiple areas and reforms such as fiscal and tax, the monetary and finance sector, trade and investment, the private sector and SMEs development, health and education, food security and agricultural

development, governance and transparency, infrastructure development, including telecommunications, and improvement in the effectiveness and efficiency of government. Upon announcement of the priority goals, the Thein Sein government committed to basing its reform process on socio-economic development (MNPED 2015).

In July 2013, the government allowed the Central Bank to operate autonomously to carry out an active monetary policy and reforms in the finance and banking sector. The government started a reform process in financial programs in the second half of 2011. This financial reform was remarkable in the history of Myanmar because the government abandoned the control of foreign currency that had been kept at a fixed rate for many years. The Central Bank of Myanmar (CBM) allowed private banks to operate foreign exchange counters and revise fixed interest rates on deposits and loans. The CBM also gave the banking licenses for foreign banks to operate in Myanmar on October 2014 (Findlay, Park, and Verbiest 2015, 12, IBP 2015, 14).

The government has implemented the reform process continually in the finance sector. With the removal of economic sanctions imposed by the EU and the US, foreign investors came into Myanmar to invest in financial sectors, especially banking services. In addition, a foreign exchange market has been operating in many private banks and foreign exchange centers. Credit cards and ATM networks have been developed and an interbank payment network has also appeared in many places. The most significant reform undertaken by the Myanmar government was the unification of the exchange rate in April 2012 by switching to the adoption of a floating exchange rate system. The government of Myanmar abolished a highly overvalued exchange rate under the socialist regime in the 1960s and replaced it with a largely market-based system. This reform process could be welcome for the current economic strategy in Myanmar.

To examine the reform process under Thein Sein's administration, Section 5.1 first reviews the economy of Myanmar and the main policy reforms undertaken since 2011. This section also analyzes the assessment of the government development vision and a medium- and long-term growth strategy. Then, it overviews the background of Myanmar's economy and its industrialization process by observing the industrial structure and its performance during the period 2011-2014. Section 5.2 presents the National Export Strategies of Myanmar by focusing on the role of agriculture and its growth strategy in other industrial structures. Section 5.3 investigates the potential of trade, investment, and the Special Economic Zones (SEZs) and Export Processing Zones (EPZs) of Myanmar. Finally, Section 5.4 concludes the examination of the Myanmar government's efforts in its reforms and strategies under the Thein Sein regime since 2011.

5.1.1 The Framework for Economic and Social Reforms (FESR)

Soon after President Thein Sein took office in 2011, the reform started to implement the development vision in order to create political, economic, and social reforms. The first step was political reform, followed by economic and social reforms. In the first stage of reforms, the emphasis was on public administrative and management in order to create good governance and clean government. Under the economic reform process, the government has implemented legislation focusing on a market-oriented economic system. The other reform processes are liberalizations of trade and investment, cooperation with regional and international organizations, building a favorable economic environment, facilitating business regulations, infrastructure development, and supporting access to capital and technology (New Light of Myanmar 2011).

Under the Thein Sein administration, four stages of reforms have been implemented. In the first phase of reforms, the government emphasized political reform, meeting for peace talks

with armed groups, implementing by-elections, and releasing political prisoners. In this stage, the Thein Sein government intended to create good governance and a clean government by focusing on institutional reform.

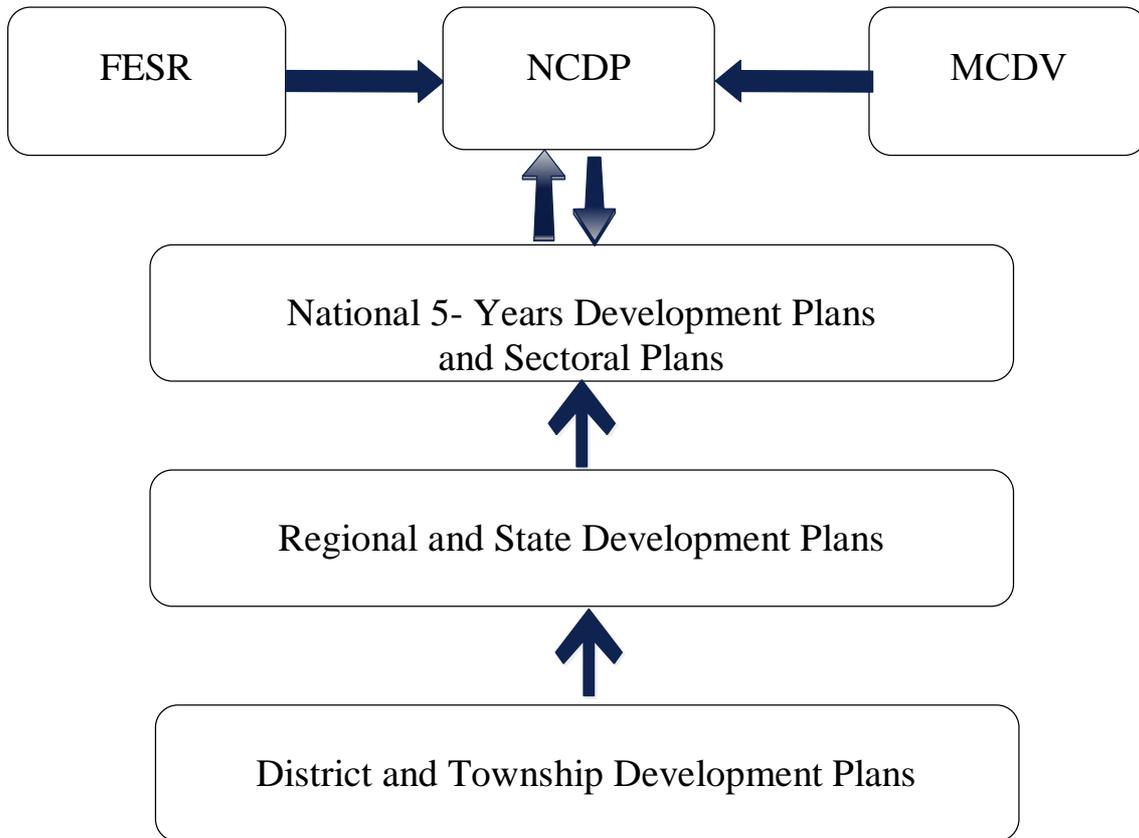
In the second stage, economic and social reforms have been implemented. Under these steps, the government set up the FESR in order to create people-centered development and government. The government invited various ministries to implement close cooperation, coordination, and collaboration among government ministries, regional, and local governments to set up the FESR plan under the economic reform process.

From the third stage of reforms, the Thein Sein government has accelerated public administrative reforms. At this juncture, better service delivery and the rule of law have been implemented to ensure good governance and clean government. The government has set up staff training to change the mindset and initiative for bottom-up government servants. Based on this initiative, the government formed “An Action Committee against Corruption” in order to combat corruption and bribery among government organizations in January 2013.

In the fourth stage of reforms, the government has attempted private sector development. In this step, the government has prioritized promoting foreign trade through regional economic cooperation and enhancing its position in the global market. Therefore, the FDI law has been revised and released under the new rules and regulations. To support private sector development, the Thein Sein government also attempted to attain macroeconomic stability and infrastructure development. In order to promote technology transfers and technical spillovers, the FDI law has been released and revised to pursue FDIs for Human Resource Development (HRD) and to upgrade other industrial sectors (Maung 2015).

The following chart shows the reform and planning for Myanmar National Economic Strategies to be implemented in the long-term vision (2011-2031).

Figure 5-1 Myanmar's Planning Process



Note:

FESR = Framework for Economic and Social Reforms

MCDV = Myanmar Comprehensive Development Vision

NCDP = National Comprehensive Development Plan

Sources: Ministry of National Planning and Economic Development (2013)

In the reform and planning process, the following objectives will be addressed as policy priorities in the long term of the National Development Goals:

- 1) sustained industrial development while maintaining the momentum of agricultural reforms and attaining poverty alleviation and rural development
- 2) equitable sharing of resources, both budgetary and foreign aid, among regions and states while promoting foreign and local investment for regional development

- 3) people-centered development through community-driven and participatory approaches to improvements in education, health, and living standards, and
- 4) reliable and timely gathering of statistics and other information to better inform public policy decisions.

In these reforms, the Thein Sein government formulates short, medium, and long-term strategies. The strategy and vision includes the interim Myanmar Comprehensive Development Vision, the Framework for Economic and Social Reforms (2012-2015), and the 20-year National Comprehensive Development Plan (2011-2031). In the Myanmar Comprehensive Development Vision, the government sets out a development strategy, two-polar growth of Yangon and Mandalay to the border development and better connectivity. On the other hand, the FESR will focus on policy reforms regarding the sustainable and equitable long-term development vision (MNPED 2015). The reform process has been carried out under the Thein Sein administrative and will be continued by the new government that took office in 2015.

The following section examines the background of Myanmar's economy and its attempt to achieve on industrialization.

5.1.2 The Background of Myanmar Industrialization Vision

After independence from Great Britain in 1948, Myanmar set up its industrial development vision. This was the Eight Year Plan launched by Minister U Nu, who practiced a market-oriented economy from 1952 to 1960. However, the plan failed due to the political issues facing in Myanmar at that time. Despite the failure, Myanmar achieved some ambitious goals and substantial progress that made Myanmar improve its infrastructure, industrialization, and agricultural diversification (Thein 2004, 19-20).

Under the leadership of General Ne Win in 1962, the Myanmar economy was closed to the international market and practiced an import substitution policy, called the Burmese Way

to Socialism. As a closed-door economic system, the economy was stagnant over the next two to three decades and fell into the status of Least Developed Country (LDC) under the Nay Win regime. While most of the rest of East and Southeast Asia enjoyed an unprecedented boom of export-led growth, Myanmar was under the rigid control of the private sector and heavily relied on state-run enterprises with an import substitution policy (Thein 2004, 51-84).

Due to political disturbances in Myanmar, the Burmese Way to Socialism collapsed and a military government came to power in September 1988. Under the State Law and Order Restoration Council (SLORC), later reconstituted as the State Peace and Development Council (SPDC), the regime implemented several reforms to promote a market-based economic system. In the reform process, it allowed the private sector to participate in the economy and opened up to FDIs and trade. To attract the FDI, the FDI law was introduced in November 1988. The regime also abolished a restriction on private sector engagement in economic activities. Moreover, the development of agriculture was the base from which the development of the rest of the economy would be built (Thein 2004, 121-171).

During the 1990s, several reforms, such as fiscal, finance sector, legal, and trade sector reforms were initiated to run the market economy and open the market to neighboring countries. The tourism sector was opened to private sector participation. Since 1996, the Visit Myanmar Year was implemented to attract tourists and attempt to upgrade the tourism sector and promote its service industries.

As a result, Myanmar achieved annual growth during the reform period. Growth was driven by the strong performance of the agriculture sector, rapid growth in the private sector, FDI inflows (including in oil, gas, and mining), and vibrant exports due to liberalization and the development of the tourism and construction sectors.

In the late of 1990s, despite achieving the target growth, there was an external factor

causing the economy of Myanmar to slow down. While opening its trade to the global market, Myanmar benefited from large FDI inflows and developed export growth. However, due to political and human rights issues against people of Myanmar, the US and EU implemented economic sanctions in 1989 and trade embargo in 2000. After that, the trade and FDI inflows declined in the late 1990s. Additionally, the official exchange rate pegged at 6 kyats to 1 US dollar was never changed. It was the main source creating major distortions in the economy, and a lack of confidence in the reforms. It distorted the FDI inflow as well as saving and investments (Thein 2004, 171-228).

In 1995, the government set up the Myanmar Industrial Development Committee (MIDC) to foster industrialization. The target was to focus on the development of agro-based industries. The aim was to fulfill the objective of domestic self-sufficiency, increased surplus for exports, and the supply of raw materials for agro-based industries (Kudo 2002, 43). Since the MIDC was formed by and mostly favored military groups, there was large-scale corruption under the Thein Sein government. Additionally, the absence and misreporting of earnings from the sale of a gemstone is a significant issue to resolve under the newly elected democratic regime in 2015 (Zaw et al. 2015, 39-40).

5.1.3 The Current Economy of Myanmar and its Industrial Promotion Policy

In Myanmar, most industries operating in the state economy have existed since the socialist era in the 1960s. They mainly engage in industries dealing with the basic processing of raw materials. Apart from these, there are few other industries engaged in manufacturing of other products. Most of the industrial production is in agriculture, food and beverages, mining, and forestry, while the other manufacturing sector is less than 10 percent.

According to international agencies like the World Bank and the International Monetary Fund (IMF), the performance of industries of the State-Owned Enterprises (SOE) is

underdeveloped. Most of the technology used in Myanmar is still in the machine stage. Therefore, Myanmar needs to reach the ASEAN level, the electronic age. Industrial management is still very weak and most plants have very poor performance due to a shortage of spare parts and the neglect of maintenance. There are no facilities to provide human resource training or technicians to upgrade the technology and to promote local products in the global market. There are also no financial institutions to help small industries or promote SME development in Myanmar.

Hence, the country has not fully reached an international level in economic relations with other countries. Myanmar's economy is still as weak as an underdeveloped state at the close of the twentieth century. The following section discusses the export performance of Myanmar from 2001 to 2014.

5.1.4 The Export Performance of Myanmar during 2001 to 2014

Natural gas was the main export product of Myanmar over the last decade. The share of natural gas increased from 30 percent in the period (2002-04) to 40 percent in the period (2009-2011), and then continually to its peak in 2014. Other products that account for large shares include wood products, agricultural products, and textiles. There is a similarity in export structure between the exports in the early 2000s and in the late 2000s. Table 5-1 shows that exports of shrimps and prawns, which used to be ranked as the fourth highest export items (4.4 percent), was no longer in the top ten by the period (2012-14), whereas beans and semi-precious stones have emerged as secondary major export items and precious and semi-precious stones became the fifth-largest export items for Myanmar in the period (2012-2014).

Table 5-1 The Top Ten Exported Products, 2002-04 and 2012-14 Averages (In Million US \$)

Top Ten Exported Products (2002-04)				
Rank	Product Code	Product Description	Value	(%)
1	271121	Natural Gas	843.09	30.2
2	440349	Logs, Tropical Hardwoods	189.65	6.8
3	440399	Logs, Non- Coniferous	143.01	5.1
4	030613	Shrimps and Prawns	122.38	4.4
5	611030	Pullovers, cardigans of man-made fibers knitted	95.65	3.4
6	071390	Leguminous vegetables dried, shelled	85.72	3.1
7	611020	Pullovers, cardigans of cotton, knitted	80.55	2.9
8	440729	Lumber, tropical hardwood, sawn	76.38	2.7
9	620193	Men anoraks, of man-made fibers, not knitted	49.95	1.8
10	740311	Cathodes and sections of cathodes	40.93	1.5
		Top ten products' share in total exports:		61.9%
Top Ten Exported Products (2012-2014)				
Rank	Product Code	Product Description	Value	(%)
1	271121	Natural Gas	2737.1	39.6
2	071331	Beans of the species vigna mungo	494.32	7.2
3	440349	Logs, Tropical Hardwoods	365.28	5.3
4	440399	Logs, Non-Coniferous	330.74	4.8
5	710399	Precious/semi- precious stones, further worked	302.52	4.4
6	071390	Leguminous vegetables dried, shelled	249.09	3.6
7	071339	Beans, dried, shelled	114.57	1.7
8	400121	Natural rubber in smoked sheets	109	1.6
9	100630	Semi-milled or wholly milled rice	94.04	1.4
10	620193	Men anoraks, of man-made fibers, not knitted	93.51	1.4
		Top ten products' share in total exports:		71%

Source: Author's calculation based on the ITC's 6-Digit HS code

The top ten exports accounted for 62 percent of Myanmar's exports in the period (2002-04), whereas they accounted for 71 percent by the period (2012-14). Unprocessed wood in the form of logs has remained a top export for Myanmar over the period. The other top export has been garment items.

Myanmar's exports are concentrated on a few destinations. Table 5-2 shows the top ten export markets of Myanmar from 2001 to 2015. Over 70 percent of exports go to a single market such as China and Thailand. These two countries became the major trade partners of Myanmar after the 2000s. Exports to Thailand increased threefold from 2001 to 2015. The reason Myanmar exports substantially to China and Thailand is the trade embargo of the US and EU in 2000. After changes in the political situation and the removal of trade sanctions in 2012, exports to other markets should also be addressed in order to enhance exports and reduce dependence on a single market.

Table 5-2 The Top Ten Export Destinations for Myanmar, 2001-2015 (In US \$)

Importers	2001-05	2006-10	2011	2012	2013	2014	2015	(% in 2015)
China	184,386	578,109	1,679,873	1,298,226	2,856,867	15,601,274	5,301,349	41.05
Thailand	1,150,538	2,722,984	3,268,318	3,673,985	4,032,926	3,916,723	3,556,632	27.54
India	392,670	944,400	1,262,044	1,346,182	1,366,238	1,392,756	1,016,301	7.87
Japan	146,865	316,741	590,014	672,031	759,296	860,665	863,623	6.69
Korea	44,510	106,323	298,681	351,164	487,769	579,718	505,677	3.92
Germany	107,656	103,035	84,766	56,461	73,261	134,630	221,001	1.71
Malaysia	95,075	162,455	233,749	183,412	198,161	167,193	176,424	1.37
UK	149,199	63,552	69,285	64,688	87,831	126,477	157,004	1.22
USA	235,428	20	-	38	31,234	95,903	150,279	1.16
Singapore	96,634	84,147	85,905	79,035	179,231	158,781	123,460	0.96

Source: Author's calculation based on the ITC database

Before imposing trade sanctions, the EU and the US were the main destination markets for Myanmar's exports, particularly the export of garment products. After the sanctions, Asian countries became Myanmar's top ten export destinations. Myanmar developed its trade with Thailand, China, Japan, and India, while reducing its trade intensity with the EU and the US. The rapid growth of exports to China is notable, and the main export items of Myanmar consist primarily of gas, semi-precious stones, and wood products. Exports to other ASEAN countries such as Thailand also improved during this period.

Table 5-3 Myanmar Top Ten Export Items in 2010-2014 (Share in %)

Code	Product label	2010	2011	2012	2013	2014
71	Pearls, precious stones, metals, coins	24.54	9.43	3.77	11.26	51.94
27	Mineral fuels, oils, distillation products	38.50	37.17	41.19	37.07	21.03
44	Wood and articles of wood, wood charcoal	7.97	13.58	14.37	15.27	6.16
62	Articles of apparel, accessories, not knit or crochet	4.36	9.38	9.91	9.60	5.42
07	Edible vegetables and certain roots and tubers	11.68	10.11	9.69	7.84	4.42
26	Ores, slag and ash	0.14	2.89	2.73	4.24	2.43
03	Fish, crustaceans, mollusks, aquatic invertebrates	4.17	3.68	3.90	3.18	1.43
72	Iron and steel	0.00	0.04	0.06	0.13	1.24
10	Cereals	2.22	3.74	2.78	1.44	0.79
61	Articles of apparel, accessories, knit or crochet	0.06	0.61	0.72	1.04	0.79

Source: Author's calculation based on the ITC database

In Table 5-3, it is notable that Myanmar's exports destined to the top ten export markets accounted for more than 90 percent of total exports from 2001 to 2015. It is clear that the export structure of Myanmar is still the least diversified, among the ASEAN latecomers such as Cambodia, Laos, and Vietnam. By observing the trade complementarity index of Myanmar in the Revealed Comparative Advantage (RCA) approach, Table 3-6, which compares a good that one country exports and another country imports, Myanmar matches the supply and demand for the same products as Cambodia, Laos, and Vietnam (CLV) on some level. On the other hand, it was shown in Table 3-7 that Myanmar has complementarity in its trade with the advanced ASEAN and East Asian nations. The outcome resulting from the analysis of Myanmar in the RCA index reveals that the correlation between the ASEAN latecomers shows highly positive, while a low correlation exists with the advanced ASEAN members that have a revealed trade complementarity. When observing outside the ASEAN region, there may be some countries, which have a high complementarity of trade with Myanmar. For example, the EU, USA, and East Asian members could be future destination markets and trade partners of

Myanmar. By applying the RCA and the GTAP model for Myanmar to assess its export competitiveness, Myanmar should establish its priorities for target industries and promote some proactive industrial policies under regional trading arrangements. Table 5-2 and Table 5-3 have clearly shown that Myanmar may need to trade more with other important partners, and it is apparent that Myanmar trades less with large economies like the US and EU. In the future, as the sanctions have been removed recently, Myanmar may need to have strong export relationships with these countries and trading blocs.

5.2 Myanmar's National Export Strategies (NES) under the Thein Sein Regime

In the 2000s, it was apparent that Myanmar's exports were still mainly dependent on resource-based industries, especially natural gas, gemstones (jade), wood products, and agricultural products. Natural gas has been the top export of Myanmar and became the key sector to attract FDIs. Given that, Myanmar's trade and balance of payments have improved significantly since the 2000s. To some extent, the natural gas exports helped Myanmar to recover from the impact of the US and EU economic sanctions on Myanmar imposed in 2000. Since the imposition of sanctions by Western countries, Myanmar's garment exports to the EU and US market that developed in the 1990s were devastated. As a result, the resource-based sectors such as natural gas, jade, wood products, and agriculture became the main engine of Myanmar's GDP in the 2000s.

Under the period of a market-oriented system in the 1980s, although Myanmar is rich in resource endowments, the country failed to upgrade its share of value-added products under regional trading arrangements. Only garments could be exported to the EU and US market in the early 2000s. When compared with its neighboring countries and other ASEAN members, Myanmar still needs to increase its share of value-added products. Currently, exports have been

largely concentrated in primary commodities such as agriculture, natural gas, gemstones, fisheries, and wood products. These exports are unprocessed and destined mainly for neighboring markets, especially for China, India, and Thailand.

In 2015, in order to achieve a developed nation, the Thein Sein government set up the National Export Strategy (NES) with the technical assistance of the International Trade Centre (ITC) and the financial support from Germany's Federal Ministry for Economic Cooperation and Development (BMZ) and the German Agency for International Cooperation (GIZ). In the NES framework, the primary objective is to develop Myanmar's foreign trade relationship with global partners under regional frameworks and targets for national development programs.

In the strategy, the NES is to promote export development and the competitiveness of Myanmar's products in the global market. The private sector was invited to participate in the NES design process with relevant ministries, business associations and representatives from academia. There are seven priority export sectors and four cross sectors in the National Export Strategy of Myanmar. Priority export sectors are mainly in the agricultural sectors such as rice, pulses and beans, oil seed crops, fish and crustaceans, wood-based products, textiles and garments, rubber, and tourism. Priority cross-sectors are trade financing, trade information and trade promotion, trade facilitation, and logistics and quality management. Since the project phase for NES has been accomplished, the implementation will soon start (MOC 2015).

5.2.1 Objectives of Myanmar National Export Strategy

The objectives of Myanmar National Export Strategy are the following:

- 1) To foster sustainable, inclusive and equitable export-led growth for the socioeconomic development of the people of Myanmar
- 2) To ensure a consistent, predictable and transparent policy, legal and regulatory framework

- 3) To develop competitive, diversified and branded exports by expanding productive capacities and fostering innovation
- 4) To build modern, enabled and supportive institutions to respond to the diverse needs of current and emerging exporters (MNPED 2015).

The following section examines the industrial structure of Myanmar under regional trading arrangements to support the current NES of Myanmar.

5.2.2 Agriculture

At the start of the new century, agriculture is the dominant sector in the GDP. People employed in the agriculture sector constitute 65 percent of the labor force. It accounts for 75 percent of Myanmar's total commodity production and contributes 50 per cent of GDP. In addition, 40 percent of exports consist of agricultural products (Kyi et al. 2000, 36). Although Myanmar is rich in natural resource endowments, the productivity in the agriculture sector is still very slow and sluggish after three decades. Until now, Myanmar has fortunately possessed many unexploited lands and water resources with favorable climatic conditions for both tropical and subtropical agriculture. Furthermore, Myanmar is strategically located between the Asian giants, China and India, providing a large potential market. However, due to the excessive government controls and the underdevelopment of its market system under the Burmese Way to Socialism, Myanmar's agriculture obviously lagged behind neighboring countries and ASEAN members. Until now Myanmar's technology use in the agriculture sector has been weak and is almost underdeveloped at the moment compared to ASEAN members. For its agricultural products to compete in ASEAN markets under regional trading arrangements, the development of the agriculture sector should be the main area to focus on in its strategy for economic development.

5.2.3 The Agriculture Policy of Myanmar

In the British colonial period (1824-1948), Myanmar was a rice exporter to the global market. The other major crops were beans, pulses, oil seeds, sesame and groundnut, sugarcane, tobacco, cotton, and rubber. At that time, the economy of Myanmar was open to international organizations under a free market system. Under this circumstance, there was a rapid increase in exports, mainly of rice and forest products. Rice exports grew rapidly and exports of forest products also rose during this time (Kudo and Odaka 2015, 155).

After gaining independence from the Britain, under the Burmese Way to Socialism, agriculture was highly controlled and directed by the state. The state and cooperative sectors were the major players in agricultural production. Furthermore, the government nationalized all firms and industrial sectors in order to control the methods of production. The state and cooperative sectors also determined compulsory delivery quotas, and fixed prices for all major crops. To implement this vision, the government established the land nationalization program. The objective was to take over all agricultural land because large areas of farmland were occupied by foreigners during the colonial period. The land nationalization program was to redistribute it equitably to the people of Myanmar who were actually cultivating the soil. The other program was controlling overall markets through agricultural marketing policy. The government adopted a system of official procurement of paddies and rice. The government procurement price was kept constant until 1961. Since the price system was fixed for long periods, it created a lack of production incentives for farmers. Finally, it tended to cause decline in agricultural production and as a consequence the GDP of Myanmar at the end of the socialist era (Kyi et al. 2000, 46).

Under the SPDC regime from 1988, with the adoption of a market-oriented economic system, exports increased sharply due to the liberalization of trade and opening of the market

to the international economy. In 1995, the government proudly announced that the export of rice for the year achieved a record of one million tons that equaled the records of previous years in the socialist era. The main reason for achieving the high yield was the introduction of multiple cropping on a large scale in Myanmar. The government gave the instruction and a plan to farmers of how to do multiple cropping. This caused dramatic change and high yields by using water pumps, draining water from streams, tanks, and other collected water pools. Since then the farmers have been involved in the private sector and have responded to the incentives of the market to achieve a large increase in the price of rice (Kyi et al. 2000, 37-58).

Although the main agriculture production like paddy output expanded at a high rate, farmers did not get many benefits from production at that time. This was due to price distortions, such as a different price for the market of the central government and local authorities, which was a price far below the real market rate for their outputs. According to Kyi et al. (2000, 37-58), the set price was only about one-fifth of the market price. Finally, agricultural productivity still needs to develop and farmers also need to get a benefit from agricultural production.

5.2.4 The Role of Agriculture and its Growth Strategy under the Thein Sein Regime

President Thein Sein announced in the New Light of Myanmar that the government had entered into the second phase of its reform strategy by focusing on economic development. In the announcement, the four economic policies were defined as: (1) sustaining agricultural development towards industrialization and all-round development; 2) balanced and proportionate development among states and regions with equal shares of budget and taxation, foreign aid, and foreign and local investment; (3) inclusive growth for the entire population, and (4) the compilation of accurate statistics would be implemented (NLM 2012). However,

the productivity of the agricultural sector is still very low, hence, it is a significant challenge for the government to upgrade agricultural productivity.

5.3 Trade, Foreign Investments, and Special Economic Zones

The past development of the industrial structure in Myanmar has shown that industry was underdeveloped in the early 1990s. The manufacturing industry only amounted to 10.18 percent of national output in the 1990s. The manufacturing share of GDP was less than half of the other Southeast Asian countries and of Cambodia, Laos, and Vietnam (CLV). During this period, while the other countries experienced rapid rates of economic growth and structural change, Myanmar's manufacturing share in GDP was stagnant until 2001. Due to the boom in garment exports to the US and EU in the early of 2000s, the manufacturing share started to increase and Myanmar's exports started to develop in the global market. With new exploration in resource-based industries like natural gas, jade, and wood products, these industries have been growing and emerging as the leading sectors from 2001 until now. In 2014, due to the acceleration of the production of natural gas, the share of manufacturing in GDP improved, and service sectors such as construction and tourism also have developed under the Thein Sein regime.

Since Myanmar is rich in natural resources, the agro-based sector development should be the main focus of its economic strategy. In order to overcome the resource curse (the Dutch disease), Myanmar needs to support its agriculture to become a more sophisticated agro-based industry, and other manufacturing sectors should also be emphasized for rapid industrialization and modernization as the main engine of its strategy.

The following section discusses the trade development of Myanmar during the Thein Sein regime from 2011.

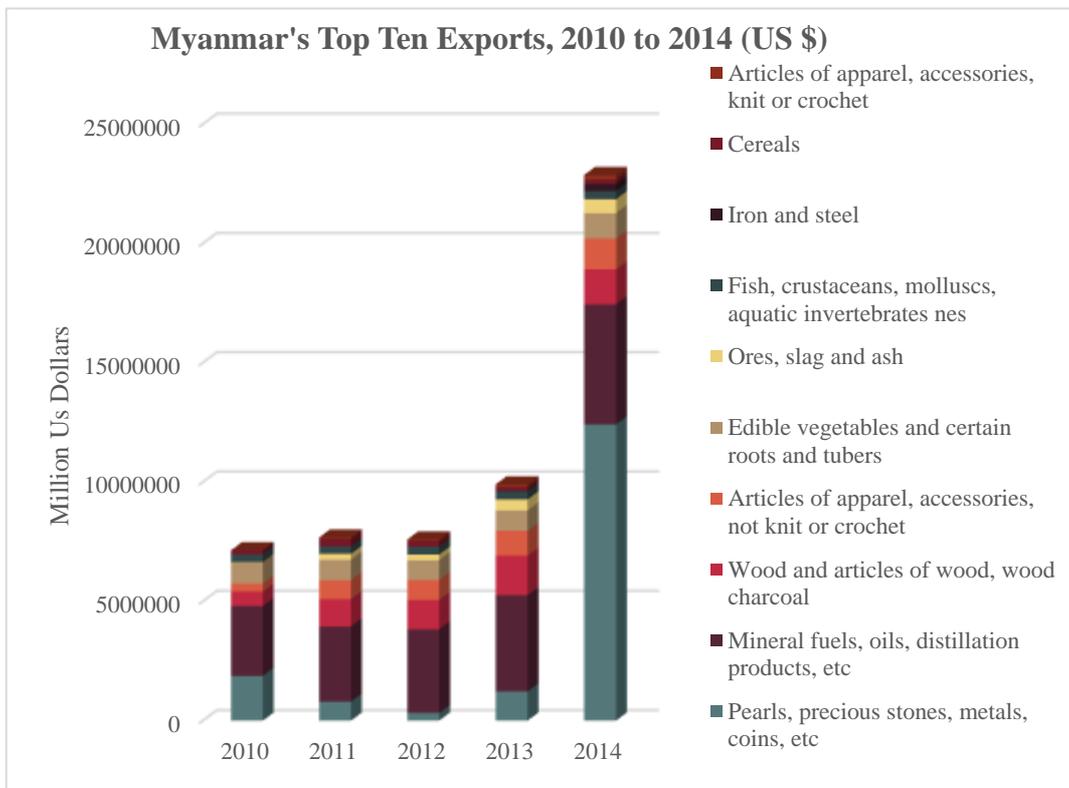
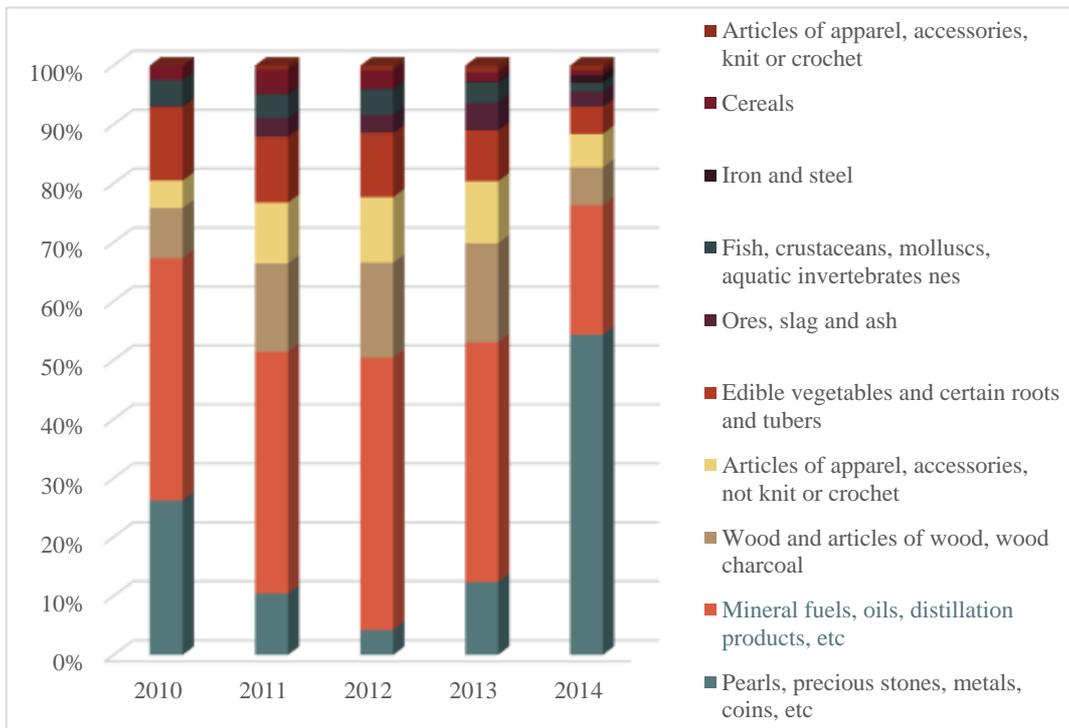
5.3.1 Trade

Recently Myanmar's foreign trade has been improving. Production of offshore natural gas became the leading export sector, rising from 2.9 billion US dollars in 2010 to 3.5 billion US dollars in 2012, accounting for 41 percent of total exports. This is followed by gemstones, which increased from 1.8 billion US dollars in 2010 to 12.2 billion US dollars in 2014. Due to the Gem Emporium held in Myanmar during the 2000s, the earnings from the sale of gemstone have been increasing. Gemstones are now the major contributor to foreign exchange earnings. In 2014, this sector became the top export earner in terms of revenue for Myanmar (ITC 2015).

As Figure 5-2 showed, export in primary commodities such as gemstones has been growing, representing 51.94 percent of total exports, followed by oil and gas sectors representing 21.03 percent, wood products for 6.16 percent, apparel products for 5.42 percent, and other sectors for 15.45 in 2014. The other top ten exports are in fisheries and agriculture. The manufacturing sector recovered in 2014 after collapsing in the 2000s under the pressure of Western economic sanctions.

The imports of Myanmar have also increased since opening up to foreign trade under regional trade agreements. The value of imports increased from 534 million US dollars in 2010 to 2.9 billion US dollars in 2011, 2.2 billion US dollars in 2013, and 2.9 billion US dollars in 2014. The top import is machinery, followed by electronic goods such as capital equipment and intermediate goods (ITC 2015).

Figure 5-2 Lists of Top Ten Products Exported by Myanmar (%)

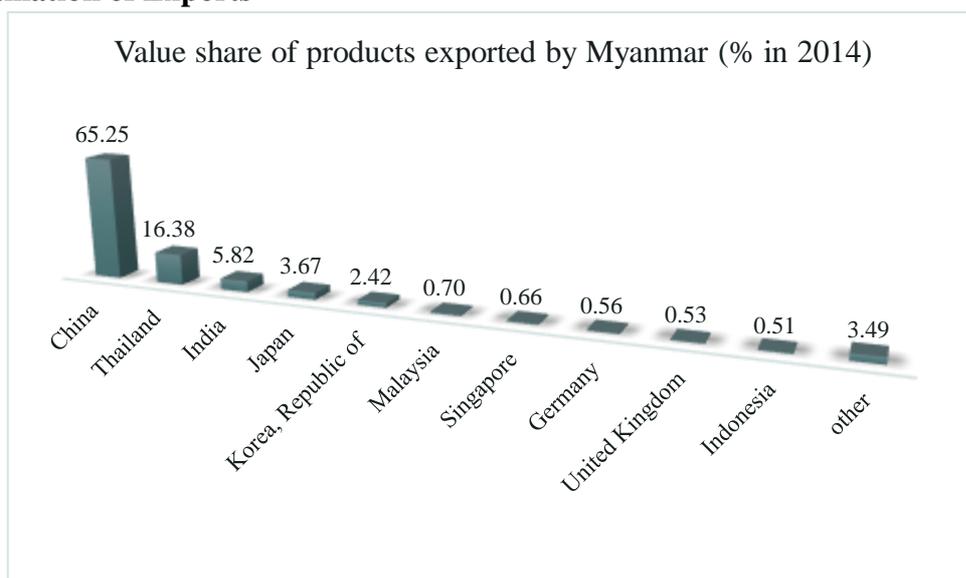


Source: Author's calculation based on the ITC database

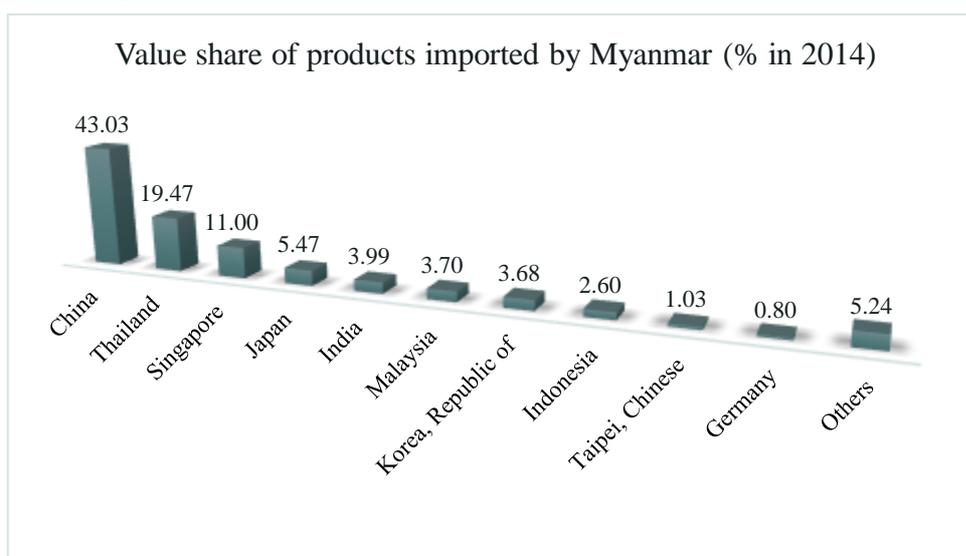
Since the sanctions imposed by Western countries, Myanmar's foreign trade partners have been its neighboring countries and ASEAN members. Exports have been mainly to Thailand, China, and India. The main export items are natural gas, gemstones, wood products, and agricultural commodities like pulses and beans.

Figure 5-3 The Trade Direction of Myanmar in 2014 (% share)

a. Destination of Exports



b. Origin of Imports



Source: Author's calculation based on the ITC database

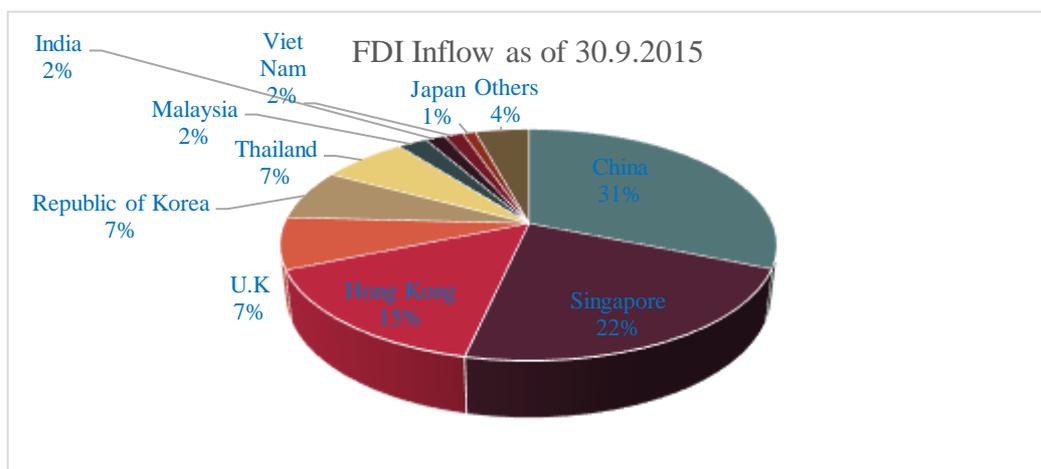
Exports to China increased from one billion US dollars in 2010 to 15.6 billion US dollars in 2014, which made China the top partner of Myanmar in 2014. Almost all natural gas exports have been going to that country. For Thailand, the export volume increased from 2.8 billion US dollars in 2010 to 3.9 billion US dollars, with almost all power exports going to this country. Exports to Japan, especially garment exports, also more than doubled from 385 million US dollars in 2010 to 878 million US dollars in 2014. Exports to the Republic of Korea reached 159 million US dollars in 2010 but have risen sharply since then, reaching 579 million US dollars in 2014 (ITC 2015).

China was the main source of Myanmar’s imports, accounting for 27.1 percent of the share in 2010 and increasing to half of import volume in 2014. Thailand is the next largest source, almost followed by Singapore, Korea, Japan, Indonesia, Malaysia, and India. Imports from the Republic of Korea, Singapore, Japan, and Malaysia grew rapidly from 2010 to 2014.

5.3.2 Foreign Direct Investments (FDIs) in Myanmar

The FDI flow into Myanmar has been weak during 2013 to 2014 while comparing FDIs flow into Myanmar in 2010.

Figure 5-4 FDIs Inflow in Myanmar by Country as of 30.9.2015

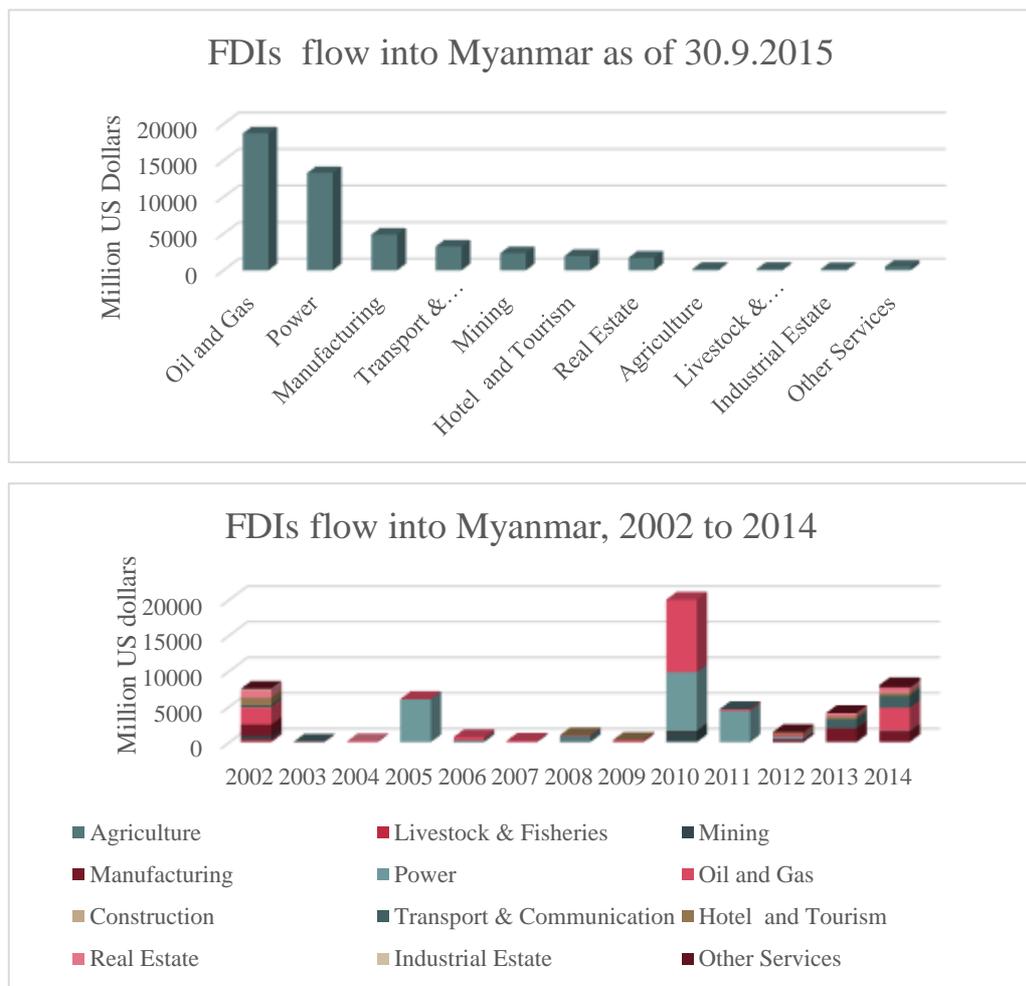


Source: The Directorate of Investment and Company Administration (DICA), Myanmar.

The annual inflow rose gradually and reached 47.22 billion US dollars in 2015. After the reforms in 2011 and the enactment of the new FDI law in November 2012, many foreign investors started to come to Myanmar. Many foreign direct investments are in the power, oil, and gas sectors, followed by manufacturing, transport, and communication. Figure 5-4 shows that China has been the largest investor, followed by Singapore, Thailand, Hong Kong, and the UK (DICA 2015).

Approved foreign direct investment changed from 2011 to 2014. Figure 5-5 shows FDI inflow to Myanmar by sector.

Figure 5-5 FDI's Flow into Myanmar by Sectors



Source: The Directorate of Investment and Company Administration (DICA), Myanmar.

In 2011, approved FDI was 4.6 billion US dollars. In 2012, it fell to 1.4 billion US dollars and rose again to 4.1 billion US dollars in 2013. In 2014, FDI approvals reached about 8 billion US dollars. From 2013 to 2014, FDIs flowed to diverse sectors, especially manufacturing, hotels and tourism. In 2013, FDI approved in manufacturing increased to 1.8 billion US dollars, 435.21 million in real estate, and 440.57 million US dollars in hotel and tourism (DICA 2015).

5.3.3 The Special Economic Zones

Myanmar is currently changing its economic reform to promote its foreign trade relationships with global trade partners. In order to promote export-processing industries, the government of Myanmar established the Special Economic Zone (SEZ) to create a structural change in manufacturing industries. In Myanmar, the agricultural sector and natural resource-based dominate GDP. The manufacturing sector is still very small compared to other ASEAN members. Foreign Direct Investments have been highly concentrated in the resource-based sectors, especially natural gas, power, mining, and jade.

In 2014, the government passed the Special Economic Zone (SEZ) law to establish the three Special Economic Zones of Myanmar, namely Thilawa SEZ, Dawei SEZ, and Kyauk Phyu SEZ. Currently, the Thilawa SEZ is the most active project, supported by large Japanese companies. It has been developed through a Myanmar-Japan joint venture called Myanmar-Japan Thilawa Development Limited. The stakeholders are the government of Myanmar, the Japanese government, a Myanmar private consortium, and a Japanese private consortium. The government of Myanmar has a 10 percent stake through the Thilawa SEZ Management Committee (TSEZMC), while the Japanese government also has a 10 percent stake through the Japan International Cooperation Agency (JICA). The Myanmar private consortium has a 41 percent stake through the Myanmar Thilawa SEZ Holdings Public Limited, while Japanese

private consortium has a 29 percent stake through MMS Thilawa Development Co., Ltd. Under the Thilawa SEZ project, much of FDI is concentrated in the manufacturing, real estate, and communication sectors (Myanmar SEZ 2015).

Among the three SEZ projects, the Thilawa SEZ has been progressing and is expected to boost Myanmar's economy soon. The details of SEZs are as follows.

The Kyauk Phyu SEZ is being developed by the governments of China and Myanmar. The SEZ is a deep-sea port, industrial and estate zone located strategically between China and India. The implementation schedule has three phases which target project completion by 2016, 2020, and 2025 respectively. When the project is finished, it is expected to rival Singapore as the petrochemical hub and gas pipeline supplying China. As the SEZ is very far from the business capital (Yangon), it is hard to access major city markets. Hence, this SEZ is especially dedicated to the natural gas pipeline project.

The Dawei SEZ is being developed by the governments of Thailand and Myanmar with support from Japan. The SEZ is a deep-sea port, multiple industrial zone and shipyard. When the project is finished, the SEZ will be the largest industrial zone in Southeast Asia, covering a total of 196 square km. Although this SEZ started earlier than the others, the project was suspended in 2013 due to financial handling by the Italian-Thai Co. Ltd. The first phase of this project was planned to start in 2015. The Dawei SEZ is 200 km from Bangkok. When the project is completed, it will be a good opportunity for border trade between Thailand and Myanmar in the future.

The Thilawa project has been developed by the Japan and Myanmar private and public sectors. As the project was actively implemented in August 2015 with the support of Japan, the second phase will be finished in 2016. The third phase is expected to be finished in 2018. The export and import zone of the SEZ is currently operational. As the Thilawa SEZ is located 20

km away from the business city, Yangon, it is an important opportunity for the local market and international markets as well.

As Myanmar is currently actively participating in regional trade agreements, the government released and revised the SEZ and FDI laws in 2011 in order to attract more FDIs into Myanmar. Under the industrial zones provisions of the Foreign Investment Law, by investing in the industrial zone, the government of Myanmar allows tax exemption for five years, and when reinvesting it continues allowing a 50 percent tax exemption on profits and tax exemption for one year. For customs duties, the government grants duty-free status to the importation of raw material needed during the construction period. The exemption for imported raw materials is for the first three years of commercial production. For land lease, the investor can lease from the government of Myanmar for up to 70 years (Myanmar SEZ 2015).

5.4 Conclusion

According to World Bank's World Governance Indicator, Myanmar is the lowest in the government effectiveness. The indicator shows the public service, the quality of civil servants and the degree of independence from political pressure, the quality of policy formulation and implementation, and the credibility of the government commitment to such policies (World Bank 2015). This may be a major challenge and issue for Myanmar under the government newly elected in 2015. However, the newly elected government is currently implementing its priority tasks to achieve the target plans under the guideline of the State Counselor of Myanmar, Daw Aung San Su Kyi. The priority reforms to improve good and clean governance are establishing and amending laws and regulation, improving institutional reforms in various government ministries, initiating public administrative reforms, improving transparency, and combating corruption according to the target plans. Under the administration of the State Counselor, large numbers of ministries that existed under the previous governments have been

combined into single ministries. The objective was to make the government effective and governance clean. Hence, government ministries were reduced under the plan to eliminate unnecessary staff in crowded government offices. These initiatives are designed to create a compact and efficient government with ministerial organizations under the reform process. For example, two previous two ministries, the National Economic Development Planning (NEDP) and Ministry of Finance, became the unified Ministry of Planning and Finance.

For macroeconomic stability, as Myanmar launched a stock exchange market at the end of 2015, careful attention must be paid to the inflation issue and currency crisis. Therefore, a stable monetary policy and sound financial policy have to be implemented. The essential objective of macroeconomic management is to formulate a stable exchange rate that will promote trade and investment, and then finally create economic growth and development. Currently, as Myanmar has relied on its foreign exchange earnings from the resource-based sector, it can lead to a serious economic threat like the Dutch Disease.

According to the Myanmar National Export Strategy (NES), the main focus of economic development is the agriculture and agro-based industries. As Myanmar is rich in natural resources and a young, educated workforce, high productivity of labor (human resources) should be achievable. The young, educated workforce will then support other sector development, and the surplus workforce will help Myanmar to develop its economy. From the ten priorities sectors of the FESR, agriculture is one of the target sectors for economic growth. The other priorities are also related to agricultural development. Under the guidance and planning of the new Minister of Agriculture and Live Stock, the government will create loans for farmers and peasants in order to accelerate export of agricultural products to the global market. Currently, agriculture and fishery products are in high demand from neighboring countries, especially China, India, and Thailand.

In order to participate in the ASEAN Economic Community (AEC), Myanmar's National Export Strategy will be an important vision for further reforms in regional trading arrangements. Recent reforms in foreign exchange unification and the adoption of a managed float system will have a large impact and benefit exports and imports, especially for the domestic producer and consumer. Recently the government eased the restriction on foreign exchange currency purchasing, especially for importing automobiles, health services, and travel expenses. To follow the AEC goals, the government also passed the foreign investment law in 2015 to attract FDI and relieve the burden of heavy regulations (i.e. import licenses and quotas) to reduce transaction costs (DICA 2013, 4, MNPED 2015).

To promote private sector development and foreign direct investment, the government revised the FDI and the citizenship investment laws. In the new laws, the government allows foreign investors to operate with 100 percent equity ownership and favorable tax incentives, a long lease for land, and various standards for environmental and social protection. Recently, the government implemented a one-stop service in order to apply for the license for import goods (DICA 2013, 29).

To summarize the country's industrialization and national export strategy, Myanmar needs to focus on the following areas: first, as Myanmar has been engaged in a reform process under the political, social, and economic agenda, it may require good governance, better institutions, and a sound macroeconomic policy. The economic policies of Myanmar should be clearly formulated, not just on paper, and the drafts, plan, and visions should be implemented. Finally, the designated sectors and industries should be given priority to achieve the industrialization vision.

Second, as Myanmar is rich in natural resources, especially agricultural land, marine resources, mining, and forestry, it should promote these industries as part of a sophisticated

agro-based industry by upgrading from raw material-oriented exports to semi-processed goods and finished goods in the future. For example, Myanmar still exports its forest products as a raw item, a log, to China and Thailand. It should produce finished goods like furniture in the future. Upgrading from processing in agriculture and foods and beverages into manufacturing industries of agriculture and foods and beverages will create more benefit for local people, a local market, and less dependence on imported goods.

Third, heavy extraction and dependence on natural resources such as gas, oil and power production can lead to the Dutch Disease and environmental degradation. Therefore, Myanmar needs to change its economic structure and pattern from heavy natural resource dependence to a diversified export pattern in the future. It is essential that Myanmar build diversified export items for the global market.

Last, as Myanmar is currently developing SEZs to promote its heavy industries, it should observe the experiences of the advanced ASEAN members to repeat the merits and avoid risks in order to gear its industrialization process to the globalization era.

Appendix 5.1

Summary on the Economic Strategy of Myanmar under the Thein Sein Regime

Reform	Reform Process
Political Reform	<ol style="list-style-type: none"> 1. Released political prisoners 2. Implementing good and clean governance
Economic Reform	<ol style="list-style-type: none"> 1. legislation focusing on the market-oriented economic system 2. liberalization of trade and investment 3. cooperation with regional and international organizations 4. building a favorable economic environment 5. facilitating business regulations 6. infrastructure development 7. supporting access to capital and technology
FESR	<ol style="list-style-type: none"> 1. FESR adopted in 2012 and published in January 2013 2. a number of short -term and a long-term development plan 3. long-term goals (2011-2031)
Covering Area	<ol style="list-style-type: none"> a) fiscal and tax reforms b) monetary and finance sector reforms c) trade and investment liberalization d) private sector and small and medium-sized enterprise development e) health and education f) food security and agriculture development g) governance and transparency h) infrastructure development, including mobile phone and internet i) improvement in the effectiveness and efficiency of government.
National Plan	<ol style="list-style-type: none"> 1. National 5-Year Development Plans and Sectoral Plans 2. Regional and state development plans (Balanced Growth)
Priority export sectors	<ol style="list-style-type: none"> 1. Myanmar National Export Strategy (NES) 2. Key Industries: Rice; Pulses and Beans; Oil Seed Crops; Fish and Crustaceans; Wood-based Products; Textile and Garment; Rubber and Tourism
Priority cross sectors	<ol style="list-style-type: none"> 3. Trade Financing, Trade Information and Trade Promotion, Trade Facilitation and Logistics and Quality Management

Source: Compiled from the reform process and the FESR

Chapter 6: Conclusion, Findings, and Policy Recommendations

6.1 Synthesis of the Study

Since Myanmar has had many issues such as lagging behind the development of industrial area as of the exports, which is largely based on natural resources, failure to create simple procedures and well-organized systems in border trading, and creating multiple foreign exchange rate system, the study set out to formulate a potential industrial policy for Myanmar under regional trade agreements.

Based on five research objectives provided on page 8 of this dissertation, the study investigated the nature and export patterns of the economy of Myanmar, the comparative advantage of its exports, and its competitiveness after joining the ASEAN. The study conducted a comparative study using selected ASEAN members to draw implications for Myanmar's industrial policies and analyzed the impact on Myanmar's economy by joining in the process of East Asian economic integration and analyzed the various regional trade arrangement schemes. This research then examined the industrial promotion policy by observing the role of foreign trade, FDIs, and technology transfers to Myanmar, and particularly by examining the reform process and economic cooperation in East Asia under the Thein Sein administration.

The following sections elaborate on findings, policy implications, and discusses the limitation of this dissertation.

6.2 Main Findings and Policy Recommendations

Based on the research objectives, this dissertation has used different methodologies. The main findings and policy implications are presented chapter by chapter and discussed in the following sections.

6.2.1 Chapter 2

Chapter 2 described the historical background of Myanmar in ASEAN as an attempt to participate in regional trade agreements and its implementation process for industrialization. This chapter discussed the background of Myanmar's economy, its industrialization, economic performance, and Foreign Direct Investments (FDIs) trend. It also overviewed the trade and industrial development of Myanmar under regional trading arrangements in ASEAN and East Asia. This chapter examined the commodity and country composition of Myanmar's export and import patterns, and the trend of major sectors and industrial development in Myanmar.

This chapter has revealed that during the period of isolationism under the socialist era, Myanmar's economy experienced sluggish growth. After facing economic depression along with unstable politics, Myanmar decided to end its closed-door economic system. In 1988, Myanmar abandoned its long-term isolationism and adopted a market economy. Before membership in ASEAN, trade with the advanced ASEAN nation of Thailand was not as developed as is the current situation. After becoming a member, trade with Thailand has increased year after year. Since handling Myanmar's internal affairs with the armed groups, the regional border has become a place to mobilize goods, services, and labor to neighboring countries freely. This internal peace led Myanmar's trade with Thailand to accelerate on some levels. Besides that, trade with neighboring countries such as China, India, and Bangladesh has also been developed by joining sub-regional organizations like the GMS and BIMST-EC. In 1999, due to the effect of sanctions, the export market of Myanmar relied on the ASEAN and Asia market entirely. Although trade with the advanced ASEAN members and countries such as China, India, and Japan had been growing, there was still room to promote more cooperation and trading with the less developed members. Despite the fact that trade between Myanmar and

Vietnam has shown some progress recently, trade relationships with the new ASEAN members like Cambodia and Laos were still at a low level.

The finding was, in the 1990s, two main reasons and events happened in Myanmar's trade and industrial development. First, although the export of Myanmar's garments to the international market was growing, the garment exports ended in 2002 due to the trade embargo by the US and the Western sanctions. Second was the opening of the new natural gas field in 2003. After the collapse of garments once exported to the US and EU markets, natural gas became the main engine of Myanmar's GDP. If there had been no such kind of impacts on the Myanmar economy, these industrial sectors (textiles, agro-business, and food and beverages) would have become the main export products of Myanmar today. As a result, the main export patterns of Myanmar have still been relying on the resource-based industries (mining, forestry, energy, and agricultural products) with limited markets.

Therefore, in Chapter 3, I examined the nature and export pattern of Myanmar in ASEAN and the global market in order to draw an industrial policy for Myanmar in Chapter 4. To promote an industrial strategy, I examined the export structure of Myanmar by using a revealed comparative advantage approach. The result and findings are discussed below.

6.2.2 Chapter 3

Chapter 3 used Revealed Comparative Advantage (RCA) index developed by Balassa (1965) to examine Myanmar's export structure, comparative advantage, and the competitiveness of exports to the ASEAN and global markets. The objective of this chapter was to promote the Myanmar economy and its industrial policies along with the CLMV under the regional integration framework in the ASEAN region.

Hence, this chapter investigated the comparative advantage of Myanmar's top ten exports alongside the CLMV, especially for Myanmar to compare with the CLV. This chapter

also conducted the analysis of the variation of RCA value index and the changing export pattern in Myanmar's RCA at the global and ASEAN levels. The variation rate of Myanmar's RCA value export to the world and the ASEAN were calculated. Finally, this chapter concluded the analysis of the correlation coefficient of RCA, the correlation coefficient of CLMV's exports to the global market, and the correlation coefficient of RCA between Myanmar and ASEAN-6.

The methodology using in this chapter is developed by Balassa (1965). Then, the variation of RCA value was analyzed by the method of Benda and Lee. In the start period (2001-03), Myanmar had RCA values greater than one at the global level in 16 industries. However, it could only maintain its RCA in 10 industries by the end of the period (2010-12). Therefore, I found that 10 industries out of 16 have strong RCA in the global market.

The major finding from this chapter was, Myanmar competed with Cambodia in areas such as the articles of apparel, accessories knit or crochet (61) and articles of apparel, accessories, not knit or crochet (62). Although Myanmar had the RCA in these sectors in the early years, it lost it over time. Due to the effects of the US sanctions, Myanmar lost its comparative advantage in these industries at the global level. Myanmar competed with Laos in industries such as wood and articles of wood, wood charcoal (44), footwear, gaiters (64), the articles of apparel, accessories knit or crochet (61), articles of apparel, accessories, not knit or crochet (62), and vegetable plaiting materials, vegetable products (14). Both have a strong RCA value in industry (44) at the global level and keep their competitiveness. However, they lost their RCA value in industry (61) and (62), while Cambodia has increased its RCA value in these industries. Myanmar competed with Vietnam in areas such as the vegetable plaiting materials, vegetable products (14), the articles of apparel, accessories, knit or crochet (61) and articles of apparel, accessories, not knit or crochet (62), and fish, crustaceans, mollusks, aquatic

invertebrates (03). Both lost their RCA value in the industry (46) as time passed, despite having strong RCA value in the early years. The remaining area of competition is in the industry (03).

Among the CLMV, Myanmar had a strong RCA correlation with Laos in exports to the world market and at the ASEAN level. Most of the correlation was significant from the beginning to the end. The main finding was Myanmar and Laos are competing vigorously against each other in industries such as wood and articles of wood (44), vegetable products (14), and articles of apparel, accessories, knit or crochet (61). Regarding Vietnam, Myanmar competed with Vietnam in industries such as articles of apparel, accessories, knit or crochet (61), articles of apparel, accessories, not knit or crochet (62), and fish, crustaceans, mollusks, and aquatic invertebrates (03). Therefore, the correlation between them was significant on some level. However, because of the decline of Myanmar's RCA value in industrial areas such as articles of apparel, accessories, knit or crochet (61) and articles of apparel, accessories, not knit or crochet (62), their correlation is not significant in the beginning period. The remaining competition is only in the industry (03).

The investigation of the competition between Myanmar and the CLV revealed that, there are some changes of direction in RCA value in their top ten exports. If Cambodia has a certain comparative advantage in some industry, Laos and Myanmar lost their comparative advantage, and in the meantime, Vietnam gained the comparative advantage and became more competitive with Cambodia. When analyzing the correlation coefficient of Myanmar and ASEAN members, it emerged that Myanmar's export structure is similar to that of Cambodia, Laos, and Vietnam. The export structure of Myanmar is complementary with that of the ASEAN-6. For ASEAN-6, since the development gap between the advanced members and latecomers is enormous, the correlation coefficient between Myanmar and the ASEAN-6 is negative or very small. Hence, Myanmar and the advanced ASEAN members have not

competed against each other in their exports to the world, as the export structure of Myanmar is complementary with that of the ASEAN-6.

The study found that mining, especially natural gas export, will remain the key export of Myanmar for a long time. This kind of industrial structure will remain in the long run unless the government implement a proactive industrial policy for manufacturing industries. In the 1990s, Myanmar developed its industrialization process in labor-intensive industries like garment exports from the end of the 1990s to the early 2000s. This sector became the main export area of Myanmar and created the top export earnings until 2002. However, this ended with the US's trade embargo on Myanmar. Since Myanmar has concentrated on the sale of natural gas since 2003, this sector became the main source of Myanmar's GDP. Up to now, Myanmar's main exports still rely on resource-based industries.

The main finding for this chapter was export diversification has been very low in Cambodia, Laos, and Myanmar. Vietnam has been moving to more diversification of exports to the world. These findings would suggest that participation in AFTA has not brought the benefits of competitiveness to CLM yet. The results revealed that Myanmar has dynamic evolution in the mineral resource-based industry, particularly in the extraction of natural gas. Cambodia has been improving in garment production with competitiveness among CLMV. Laos has shifted its industrial structure from primary agricultural commodities to the resource-based production of power generation. Vietnam has been moving ahead to diversify products with competitiveness such as electrical equipment and motor vehicle parts. Therefore, with the slow progress of CLMV, excluding Vietnam, the founders of ASEAN and the new members still have challenges to narrow the gap between the advanced members and the newcomers.

The major finding from this chapter was although the garment exports of Myanmar showed progress during the 1990s, this was ended in 2002 by the trade embargo of the Western

countries. The opportunity for garment exports to the US and EU markets was lost, and Cambodia extended its market extensively with the favor of MFA offered by the Western countries. Finally, Cambodia moved ahead in the US and EU markets while Myanmar lagged behind Cambodia and Vietnam at that time. After that event, Myanmar concentrated on primary resource exports such as agriculture, forestry, fishery, and mining.

Since Myanmar has a comparative advantage in these industries, in the next chapter, I set up the industrial promotion policies for Myanmar by selecting these industries to promote capital and technology to upgrade industrial structures and markets under regional trading arrangements.

6.2.3 Chapter 4

Chapter 4 is one of the core analytical chapters and it produced main findings for policy implementations in this dissertation.

This chapter built on policies that have been conducted to be relevant for drawing an industrial policy by pursuing FDI and technology transfer into Myanmar. There are two important policies and an original contribution to create an industrial policy and economic development policy for Myanmar. First, this chapter has attempted to incorporate the experience of industrial policies adopted by selected ASEAN members. Second, I designed industrial policy simulations for Myanmar using the GTAP to implement the potential industrial policy to be adopted by Myanmar. Therefore, the primary objective of this chapter was to draw the essential strategies that can lead to rapid industrialization (regional FDI and technology transfers) and support Myanmar's economic development in the future.

In this chapter, I investigated some industrial promotion policies that are needed among the ASEAN members and the CLMV to narrow the development gap. In order for the latecomers like Myanmar to compete in the ASEAN markets, upgrading technology and capital

accumulation are necessary for Myanmar under the RTAs. Therefore, I assumed to attract/promote FDI and technology transfers from advanced countries such as Japan, China, Korea and advanced ASEAN members to Myanmar. Therefore, I conducted the simulations that are relevant to trade theory and current participation by Myanmar in regional trade agreements. Afterward, I set up policy simulations based on its current industrial strategy, reforms, and the promotion of the SEZ and EPZ with the support of the advanced countries' FDI from Japan, China, Korea, and Thailand.

In policy scenarios, there are two strategies for Myanmar to pursue. First, I selected the liberalization of trade under the commitments in regional trade agreements such as AFTA, EAFTA, and ASEAN and bilateral agreements such as ASEAN Plus One with Japan, China, and Korea respectively. Second, I assumed the FDI from Japan, China, Korea, and Thailand flowed into Myanmar in order to set up the simulation of the FDI that is relevant to the current Myanmar strategic industrial promotion since 2011. Based on the results of Myanmar's RCA analyzed in Chapter 3, I selected the six industries (agriculture, forestry, fishery, mining, textiles, and foods and beverages) to be targeted industries. These industries are also a part of the Myanmar National Comprehensive Strategy 2011-2031 discussed in Chapter 5. Finally, I drew policy implications for the status of Myanmar participating in the East Asian Growth Model by simulating the combined trade and FDI with technology transfers into the country. Under these simulations, I intended to illustrate how the FDI and technology transfers are essential for Myanmar under regional trading arrangements.

The major findings from this chapter was, the results were different from when I conducted only in the simulation of trade liberalizations. These impacts were actually larger than the relative impact of trade liberalization. The technology effect was the most favorable for Myanmar's industries because it provided the most significant welfare impacts, exports and

imports bundles, and expanding its outputs under regional trading agreement frameworks. However, under the old industrial policy that protected the domestic infant industries, it created a misallocation of resources among industries and Myanmar lost in welfare as a result. If Myanmar adopts this industrial policy, it would fail within the RTAs. Furthermore, the narrow regional trade agreements in the AFTA may not be desirable for Myanmar because it would limit the country's market, create distortion through trade diversion, and result in a loss in welfare, export and import bundles, and shrink its outputs.

The important policy implications for Myanmar were successfully drawn from this chapter using the GTAP model under the framework of regional trade agreements, movement of foreign capital, and technology transfers into Myanmar's industries. First, the results showed that Myanmar's welfare was undermined easily due to adverse trade diversion effects if it seeks narrow FTAs only with ASEAN members. Moreover, Myanmar tended to secure positive welfare gains if the AFTA expands to include China, Japan, and Korea. Second, a protection policy did not lead Myanmar to enhance its trade volume and welfare. It created the misallocation of resources among industries. Lastly, capital and technology augmentation through regional FDIs, especially from the advanced East Asian members such as Japan, Korea, and China, was essential for Myanmar to achieve industrialization. Improving technology in output (technology and technical spillover) in the targeted industries will produce a large advance in its industrial transformation, leading to sizable welfare gains.

Therefore, these findings from Chapter 4 provided practical policy implications, as follows. First, if Myanmar wishes to re-start its path to industrialization and economic development, it needed to use the frame of regional trade agreements like EAFTA and ASEAN plus Japan, Korea, and China rather than the ASEAN Free Trade Agreement. The EAFTA gave Myanmar better welfare gains than the AFTA. Second, given the role of augmented capital

stock through FDIs and technology transfers that accompany these investments, improving technology in procurement, production, and marketing created more welfare gain for Myanmar. A proactive industrial promotion policy was essential for Myanmar to achieve its industrialization. Industrial promotion policies in a comparatively advantaged sector (such as agriculture) should be promoted through more capital-intensive industry, meaning that agro-based industry is essential. Food and beverages also need to be upgraded, as Myanmar is rich in these resources. Textiles (garments) are in the most favorable condition to upgrade, not only for competitiveness but also for job opportunities in the take-off period. Special Economic Zones and Export Processing Zones can be the primary objective for Myanmar in the long run. Last, a protection policy did not work under regional trade agreements, as it created resource misallocation from advantaged industries to disadvantaged industries.

The finding from this chapter suggested that small economies like Cambodia, Laos, and Myanmar, with limited markets and less-diversified exports, faced welfare loss under regional trade agreements. It means ASEAN latecomers need to prepare their industrial policies well under regional trade agreements. It confirmed for Myanmar that without new investment (FDIs) and technology transfers, and a favorable and proactive set of policies it would lose welfare by joining the RTAs. Myanmar's welfare gain was better in the EAFTA than the AFTA. Welfare gain was also high for all East Asian members.

6.2.4 Chapter 5

Chapter 5 was the analytical chapter for Myanmar attempting to achieve its development strategies and visions under the civilian government since 2011.

The objective of this chapter was to investigate the economic strategies of Myanmar and investigate the impact of the removal of trade sanctions from the EU and US on the economy and the changing conditions in Myanmar. Chapter 5 synthesized, in a consistent

manner, the current economic reforms, strategy, and industrial structures. This chapter is related to the results of Chapter 4 based on the policy implications of the country's industrial policy. This chapter discussed the reforms, strategy and industrial structure of Myanmar's industrialization process under the Thein Sein regime. Based on the results of the combined FDI, technology transfers, and full liberalization of trade within the global market and East Asia region, Myanmar may need to set up an important strategy that is relevant to the current promotion of the SEZs and EPZs with the support of the advanced Asian countries like Japan, China, Korea, and Thailand. Therefore, I evaluated the reforms, strategy, and industrial structure of Myanmar in this chapter in order to implement a long-term strategy of industrial promotion policy conducted and proven in Chapter 4.

The main finding from this chapter was, according to the World Bank's World Governance Indicator, Myanmar is the lowest in government effectiveness. This issue may be a significant challenge for Myanmar under the newly civilian elected government in 2015. For macroeconomic stability, a stable monetary policy and sound financial policy are necessary to implement priority reforms. The essential objective of macroeconomic management is to formulate a stable exchange rate that will lead to the promotion of trade and investment, and then finally create economic growth and development. Myanmar has currently relied on the resource-based sector for creating foreign exchange earnings, hence, it is the challenge for Myanmar to overcome the effect of the Dutch Disease.

The main findings for policies and strategies for Myanmar are presented here. The empirical strategy for Myanmar can be proceeded as follows. First, as Myanmar has been engaged in a reform process with a political, social, and economic agenda, good governance with better institutions and a sound macroeconomic policy are required. To achieve economic development, policies should have formulated clearly. The planning and strategy should be

implemented after formulating the drafts, plan, and visions. Afterward, the designated sectors and industries should be given priority to achieve industrialization.

Second, as Myanmar is rich in natural resources, particularly in agricultural land, marine products, mining, and forestry, it should promote these industries to become more sophisticated agro-based industries. Myanmar should upgrade its industrial structures from raw material-oriented exports to semi-finished goods and finished goods in the future. For example, Myanmar still exports its forest products as logs to neighboring countries such as China and Thailand. It should produce semi-finished goods or final goods like furniture in the future. Upgrading the processing of agriculture and foods and beverages into the manufacturing of agricultural commodities will create more benefit for local people, the local market, and less dependence on the imported goods.

Third, heavy extraction and dependence on natural resource sectors such as gas, oil, and power production can lead to the Dutch Disease and environmental degradation. Therefore, Myanmar needs to transform its economic structure and pattern from natural resource dependence to diversified export patterns in the future. It is essential that Myanmar builds diversified export items for the global market.

Last, as Myanmar is currently developing SEZs to promote its heavy industries, it should look at the experiences of advanced members to learn merits and avoid risks in order to gear its industrialization process to the realities of the globalization era.

6.3 Additional Policy Recommendations

This dissertation suggested that a proactive industrial promotion policy was essential for Myanmar to achieve in a comparatively advantaged sector (such as agriculture), to be promoted by more capital-intensive industry. Food and beverage also need to be upgraded, as Myanmar is rich in these resources. Textiles (garments) are in the most favorable condition to

upgrade, not only for competitiveness but also for job opportunities in the take-off period. Special Economic Zones and Export Processing Zones can be the primary strategy for Myanmar to attract FDIs, to absorb better production/management technology, and to gain market access. Next, a protection policy did not work under regional trade agreements, as it created resource misallocation from the advantaged industries to the disadvantaged industries. For the macroeconomic stability, a stable monetary policy and sound financial policy were necessary to implement the priority reforms. Therefore, the essential objective of industrial policy, the macroeconomic management, a stable exchange rate will gear trade and investment, and economic development of Myanmar.

6.4 Limitations of the Study

This study has some limitations in the collection of data for the Myanmar case study. Until now, empirical studies and research on Myanmar are very limited. Even data available from the government official statistics is not reliable and consistent for application to studies of Myanmar.

Therefore, this study primarily used the GTAP 9 database to investigate and draw implications for Myanmar's industrial policies.

The other databases were mainly collected from the International Trade Center (ITC), COMTRADE, ADB, ASEAN, the Central Statistics Organization (CSO) of Myanmar and policy surveys of Myanmar by my own field survey in Myanmar.

6.5 Possible Future Research for Myanmar

In this study, the primary data was collected from the ITC database of the mirror data reported by trade partners of Myanmar. Furthermore, the GTAP database for Myanmar applied in the dissertation was not of an independent country but was composite data with Timor-Leste,

or as a residual group of the ASEAN region. Therefore, it may have some limitations to the examination of an independent country. If the GTAP database is upgraded for the Myanmar database as a separate and an independent economy in the future, it will be a good opportunity for future research on Myanmar in the Computable General Equilibrium (CGE) model.

Last but not least, as Myanmar is actively reforming its economic and political system, partly in cooperation with international organizations, implemented strategies and cases should be continuously monitored and assessed against the identified policy directions in this study.

References

- ADB. 2010. Key Indicators for Asia and the Pacific 2010.
- ADB. 2013. "Key Indicators for Asia and the Pacific 2013 | Asian Development Bank."
- Ahn, Choong Yong, Richard E. Baldwin, and Inkyo Cheong. 2005. *East Asian Economic Regionalism: Feasibilities and Challenges*: Springer.
- Altenburg, Tilman. 2011. "Industrial Policy in Developing Countries: Overview and Lessons from Seven Country Cases." *German Development Institute / Deutsches Institut für Entwicklungspolitik (DIE) Discussion Paper 4*.
- Amakawa, Naoko. 2010. *Industrialization in Late-Developing ASEAN Countries: Cambodia, Laos, Myanmar and Vietnam*. Singapore: Tokyo: NUS Press.
- Ariff, Mohamed, and Hal Hill. 2010. *Export-Oriented Industrialisation: The ASEAN Experience*: Routledge.
- ASEAN. 2002. ASEAN Annual Reports.
- Aung, Maung, and Min Min Than. 2007. "BIMSTEC- Japan Cooperation in International Trade: Myanmar Perspective." *Centre for Studies in International Relations and Development*.
- Balassa, Bela. 1965. *Trade Liberalization and Revealed Comparative Advantage*: Yale University, Economic Growth Center.
- Balassa, Bela. 1977. "Revealed" Comparative Advantage: Johns Hopkins University, Dept. of Political Economy.
- Balassa, Bela. 1979. "The Changing Pattern of Comparative Advantage in Manufactured Goods." *The Review of Economics and Statistics* 61 (2):259. doi: 10.2307/1924594.
- Balassa, Bela A. 1989. *Comparative Advantage, Trade Policy and Economic Development: Harvester Wheatsheaf*.
- Baldwin, Richard. 2012. "Sequencing Asian Regionalism: Theory and Lessons from Europe." *Journal of Economic Integration* 27(1).

- Bank, World. 2005. *Regional Trade and Preferential Trading Agreements: A Global Perspective*.
- Bargawi, Omar. 2005. "Cambodia's Garment Industry – Origins and Future Prospects." *Overseas Development Institute London ESAU Working Paper 13*.
- Bender, Siegfried, and Kui-Wai Li. 2002. "The Changing Trade and Revealed Comparative Advantages of Asian and Latin." *Economic Growth Centre, Yale University No 843*.
- Bhagwati, Jagdish. 1996. *Regionalism And Multilateralism: An Overview*: Cambridge University Press.
- BIMSTEC. 2010. Declaration on the Admission of the Union of Myanmar and the Re-Naming of BIST-EC.
- Bowen, H. P. 1983. "On the Theoretical Interpretation of Indexes of Trade Intensity and Revealed Comparative Advantage." *Weltwirtschaftliches Archiv-Review of World Economics* 119 (3):464-472. doi: Doi 10.1007/Bf02706520.
- CARIS. 2011. *Economic Integration in South East Asia and the Impact on EU*. Centre for the Analysis of Regional Integration at Sussex(CARIS).
- Chhair, Sokty, and Ung Luyna. 2014. "Learning to Compete." *AGI-Brookings, Working Paper No. 7*.
- Chia, Siow Yue, Marcello Pacini, Institute of Southeast Asian Studies, and Fondazione Giovanni Agnelli. 1997. *Asean in the new Asia: issues and trends*: Institute of Southeast Asian Studies.
- Chia, Siow Yue, and Michael G. Plummer. 2015. *ASEAN Economic Cooperation and Integration*: Cambridge University Press.
- Chien, Chen-Lin. 2010. "Study of the Change in Export Competitive Advantage of Japan, China, South Korea and Taiwan in the US Market – Using RCA as the Measurement Index." *The Journal of International Management Studies* Volume 5 (No. 118 1).
- Clark, Don P. 2005. "Revealed Comparative Advantage Indexes for Regions of the United States." *Economy Journal* Vol. 5 (Iss. 1).

- Collier, Paul, David Dollar, and World Bank. 2002. *Globalization, Growth, and Poverty*: World Bank Publications.
- CSO. 2015. Statistics Year Books. In *Central Statistics Organization, Ministry of Planning and Finance*.
- Das, Sanchita Basu, and Masahiro Kawai. 2016. *Trade Regionalism in the Asia-Pacific: Developments and Future Challenges*: ISEAS-Yusof Ishak Institute.
- DICA. 2013. Framework for Economic and Social Reforms| Original edition, Government of, Myanmar.
- DICA. 2015. Foreign Investment of Existing Enterprises as of 30/9/2015. edited by Myanmar DICA.
- Ezaki, Mitsuo, and Tien Dung Nguyen. 2008. "Regional Economic Integration and its Impacts on Growth, Income Distribution and Poverty in East Asia: A CGE Analysis." *GSID* (No.167).
- Felker, Greg. 2001. "The Politics of Industrial Investment Policy Reform in Malaysia and Thailand." In *Southeast Asia's Industrialization*, edited by K. S. Jomo, 129-182. Palgrave Macmillan UK.
- Findlay, Ronald, Cyn-Young Park, and Jean-Pierre A. Verbiest. 2015. Myanmar: Unlocking the Potential. A Strategy for High, Sustained, and Inclusive Growth. In *ADB Economics Working Paper Series, No-437*.
- Fort, Bertrand, and Douglas Webber. 2008. *Regional Integration in East Asia and Europe: Convergence or Divergence?: Taylor and Francis*.
- Fujita, Kōichi, Fumiharu Mieno, and Ikuko Okamoto. 2009. *The Economic Transition in Myanmar After 1988*: NUS Press.
- Gilbert, John, Robert Scollay, and Bijit Bora. 2004. *New Regional Trading Developments in the Asia-Pacific Region, Global change and East Asian policy initiatives (pp. 121–190)*: Washington, DC: World Bank.
- Gilmour, Karen, Anne-Marie Humphries, Australia East Asia Analytical Unit, and Phillip Stonehouse. 1997. *The new ASEANs: Vietnam, Burma, Cambodia & Laos*: EAAU, Dept. of Foreign Affairs and Trade.

- Global Witness. 2015. A Global Witness Investigation into Myanmar's Big State Secret
- Gordon, James, and International Monetary Fund. 1999. *Myanmar*: International Monetary Fund.
- Hara, Yonosuke, and Hisato Shuto. 2005. Trade Structures and Export Competitiveness in Lao PDR and the East Asian Countries. Japan International Cooperation Agency.
- Hauff, Michael von. 2007. *Economic and Social Development in Burma/Myanmar*: Metropolis-Verlag GmbH.
- Hertel, Thomas. 1997. *Global Trade Analysis: Modeling and Applications*: Cambridge University Press.
- Hertel, Thomas, and Marinos Tsigas. 1997. "Structure of GTAP." *Center for Global Trade Analysis*.
- Hill, Hal, and Jayant Menon. 2013. "Cambodia: Rapid Growth with Weak Institutions." *Asian Economic Policy Review* 8 (46-65).
- Hillman, Arye L. 1980. "Observations on The Relation Between "Revealed Comparative Advantage" and Comparative Advantage As Indicated By Pre-Trade Relative Prices." *Weltwirtschaftliches Archiv* 116 (2):315-321. doi: 10.1007/bf02696859.
- Hlaing, Kyaw Yin, Robert H. Taylor, and Institute of Southeast Asian Studies. 2005. *Myanmar*: Institute of Southeast Asian Studies.
- Hlaing, Kyaw Yin, Robert H. Taylor, and Tin Maung Maung Than. 2005. *Myanmar: Beyond Politics to Societal Imperatives*: Institute of Southeast Asian Studies.
- Holst, David Roland, and Lar Ni. 2008. "GTAP 7 Data Base Documentation - Chapter 7 I-O Table: Myanmar." *Center for Global Trade Analysis*.
- Ianchovichina, Elena, and Terrie Walmsley. 2003. *The Impact of China's WTO Accession on East Asia*: World Bank Publications.
- IBP, Inc. 2015. *Myanmar: Doing Business and Investing in Myanmar Guide Volume 1 Strategic, Practical Information and Contacts*: Lulu.com.

- Imada, Pearl, Seiji Naya, and Institute of Southeast Asian Studies Asean Economic Research Unit. 1992. *AFTA: The Way Ahead*: Institute of Southeast Asian.
- ITC. 2013. "Designing a strategy to develop Myanmar's exports."
- ITC. 2015. Trade Map - List of Importing Markets for A Product Exported by Myanmar.
- Jalal, Alamgir. 2008. "Myanmar Foreign Trade and its Political Consequences." *Asian Survey* Vol. 48 (Issue 6):977-996.
- James, Helen. 2005. *Governance and Civil Society in Myanmar: Education, Health, and Environment*: Routledge.
- JICA. 2007. The Study on Economic Policy Support in the Kingdom of Cambodia: Final Report.
- Kawai, Masahiro, and Ganeshan Wignaraja. 2008. "Regionalism as an Engine of Multilateralism: A Case for a Single East Asian FTA." *ADB Regional Economic Integration* No. 14.
- Khan, Mushtaq. 2013. "Technology Policies and Learning with Imperfect Governance." In *The Industrial Policy Revolution I. The Role of Government Beyond Ideology*, edited by Joseph Stiglitz and Justin Yifu Lin, 79-115. London: Palgrave.
- Kojima, Kiyoshi. 2000. "The "Flying Geese" Model of Asian Economic Development: Origin, Theoretical Extensions, and Regional Policy Implications." *Journal of Asian Economics* 11 (4):375-401.
- Kreinin, Mordechai Elihau, and Michael G. Plummer. 2002. *Economic Integration and Development: Has Regionalism Delivered for Developing Countries?*: Edward Elgar Publishing.
- Kubo, Koji. 2012. "Real Exchange Rate Appreciation, Resource Boom, and Policy Reform In Myanmar."
- Kudo, Toshihiro. 2002. "Industrial Development in Myanmar: Prospects and Challenges." *Institute of Developing Economies Japan External Trade Organization ASED* No. 60.
- Kudo, Toshihiro. 2007. "Myanmar and Japan: How Close Friends Become Estranged." *IDE Discussion Paper* No. 118.

- Kudo, Toshihiro. 2009. "Location Advantages and Disadvantages in Myanmar: The Case of Garment Industry." *IDE Discussion Papers* No 203:3.
- Kudo, Toshihiro, and Konosuke Odaka. 2015. "Post-colonial Industrialisation in Myanmar " In *The Myanmar Economy: Its Past, Present and Prospects*. Springer.
- Kyi, Khin Maung, Ronald Findlay, R. M. Sundrum, Mya Maung, Myo Nyunt, and Zaw Oo. 2000. "A Vision and a Strategy:Economic Development of Burma." *the Center for Business Research and Development (CBRD), Faculty of Business Administration, National University of Singapore, Singapore*.
- Laursen, Finn. 2003. *Comparative Regional Integration: Theoretical Perspectives*: Ashgate Publishing, Ltd.
- Leung, Suiwah, Benedict F. W. Bingham, and Matt Davies. 2010. *Globalization and Development in the Mekong Economies*: Edward Elgar Publishing.
- Lin, Justin Yifu. 2010. "Industrial Policy Comes Out of the Cold by Justin Yifu Lin - Project Syndicate."
- Ling, Sieh Lee Mei. 2006. "FDI Inflows and Economic Development: The Postcrisis Experience of Malaysia." In *Multinationals and Economic Growth in East Asia: Foreign Direct Investment, Corporate Strategies and National Economic Development*. Routledge International Business in Asia Series.
- Martin, Michael F. 2012. U.S. Sanctions on Burma. CRS Report for Congress.
- Maung, Dr.Wah Wah. 2015. Presentation by Myanmar Representative. UNHQ, New York, USA.
- McCaig, Brian, and Nina Pavcnik. 2013. Moving out of Agriculture: Structural Change in Vietnam. National Bureau of Economic Research.
- Melo, Jaime De, and Arvind Panagariya. 1995. *New Dimensions in Regional Integration*: Cambridge University Press.
- MNPED. 2015. Ministry of National Planning & Economic Development. In *The Republic of the Union of Myanmar*.

- MOC. 2015. Myanmar National Export Strategy. In *Ministry of Commerce, The Republic of the Union of Myanmar*.
- Mukhopadhyay, Kakali, and Paul J. Thomassin. 2010. *Economic and Environmental Impact of Free Trade in East and South East Asia*: Springer.
- Myanmar SEZ. 2015. "Thilawa SEZ Management Committee."
- Myint, U. 2009. "Myanmar Economy a Comparative View." *Institute for Security and Development Policy*.
- Myoe, Maung Aung. 2006. "Regionalism in Myanmar's Foreign Policy: Past, Present, and Future." *Asia Research Institute Working Paper*.
- Narine, Shaun. 2002. *Explaining Asean: Regionalism in Southeast Asia*: Lynne Rienner Publishers.
- New Light of Myanmar. 2011. ODA Policy Consultation Meeting Held. In *Official Government Daily Released Newspaper*. Naypyidaw, Myanmar.
- Odaka, Konosuke. 2015. *The Myanmar Economy: Its Past, Present and Prospects*: Springer.
- Ohno, Kenichi. 2014. *Learning to Industrialize: From Given Growth to Policy-aided Value Creation*: Routledge.
- Otsubo, Shigeru. 2005. "Computational Analysis of the Economic Impacts of Japan's FDI in Asia." *Forum of International Development Studies, GSID, Nagoya University, Japan*. 28.
- Otsubo, Shigeru, and Tetsuo Umemura. 1998. "Foreign Direct Investment and Complementarity as Determinants of Intra-APEC Trade Flows: A Gravity Model Analysis." *APEC Discussion Paper* No. 19.
- Otsubo, Shigeru, and Tetsuo Umemura. 2003. "Forces Underlying Trade Integration in the APEC Region: A Gravity Model Analysis of Trade, FDI, and Complementarity." *Journal of Economic Integration* Volume 18.No.1:126-149.
- Plummer, Michael G., and Erik Jones. 2006. *International Economic Integration and Asia*: World Scientific.

- Rarick, Charles A. 2006. "Destroying a Country in Order to Save It: The Folly of Economic Sanctions Against Myanmar." *Economic Affairs* 26 (2):60-63. doi: 10.1111/j.1468-0270.2006.00632.x.
- Sai, Sai Seng. 2011. "Case Study of Myanmar Economic Integration in ASEAN: Revealed Comparative Advantage Approach." Master Thesis, Graduate School of International Development, Nagoya University, Japan.
- Schiff, Maurice W., and L. Alan Winters. 2003. *Regional integration and development*: World Bank Publications.
- Singh, Daljit. 2009. *Southeast Asian Affairs 2009*: Institute of Southeast Asian Studies.
- Steinberg, David I. 2002. *Burma, the State of Myanmar*: Georgetown University Press.
- Stiglitz, Joseph E. 2004. "Globalization and Growth in Emerging Markets." *Journal of Policy Modeling*.
- Than, Mya. 1992. *Myanmar's External Trade: An Overview In The Southeast Asian Context*: Institute of Southeast Asian.
- Than, Mya. 2005. *Myanmar in ASEAN*: Institute of Southeast Asian Studies.
- Than, Mya, and Carolyn Gates. 2001. *ASEAN Enlargement: Impacts and Implications*: Institute of Southeast Asian Studies.
- Than, Mya, and Loong-Hoe Tan. 1997. *Laos' Dilemmas and Options: The Challenge of Economic Transition in the 1990s*: Institute of Southeast Asian Studies.
- Than, Tin Maung Maung. 2007. *State dominance in Myanmar*: Institute of Southeast Asian Studies.
- Thein, Myat. 2004. *Economic Development of Myanmar*: Institute of Southeast Asian Studies.
- Tin, Soe. 2004. "Myanmar in Economic Transition: Constraints and Related Issues Affecting the Agriculture Sector." *Asian Journal of Agriculture and Development* Vol. 1, No. 2:58.
- Trung, Nguyen Tien. 2002. "Vietnam's International Trade Regime and Comparative Advantage." *Centre for ASEAN Studies Discussion paper* No 37.

- Turnell, Sean. 2007. "Natural Gas Exports and the Missing Billion." *Burma Economic Watch* (No-1).
- UNCTAD. 1998. Empirical Evidence of the Benefits from Applying Competition Law and Policy Principles to Economic Development in order to Attain Greater Efficiency in International Trade and Development.
- Urata, Shujiro, and Hiroki Kawai. 2000. *Intrafirm Technology Transfer by Japanese Manufacturing Firms in Asia*. The Role of Foreign Direct Investment in East Asian Economic Development ed. The University of Chicago Press: National Bureau of Economic Research.
- Viner, Jacob. 1950. *The Customs Union Issue*: Carnegie Endowment for International Peace.
- Vollrath, Thomas L. 1991. "A Theoretical Evaluation of Alternative Trade Intensity Measures of Revealed Comparative Advantage." *Weltwirtschaftliches Archiv* 127 (2):265-280. doi: 10.1007/BF02707986.
- World Bank. 2015. Worldwide Governance Indicators| World DataBank.
- Xiaolin, Guo. 2007. "Towards Resolution: China in the Myanmar Issue." *Central Asia-Caucasus Institute and Silk Road Studies Program*:56-57.
- Yong, Ahn Choong, Cheong Inkyo, and Baldwin Richard. 2005. *East Asian Economic Regionalism - Feasibilities and Challenges*: The Netherlands, Springer.
- Zaw, Oo, Cindy Joelene, Paul Minoletti, Phoo Pwint Phyu, Kyi Pyar Chit Saw, Ngu Wah Win, Ian Porter, and Mari Oye. 2015. *Fiscal Management in Myanmar*: Asian Development Bank.