AFTA AND ECONOMIC GROWTH: A STUDY OF THE PIONEERING ASEAN-5 MEMBERS

JAMES PAUL

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ABSTRACT

This thesis investigates empirically the causal relationship between changes in tariffs, and growth in Gross Domestic Product (GDP), inflows of net foreign direct investment (FDI), exports, and imports among the pioneering ASEAN-5 countries over the period of 1970 to 2013.The objective is to revisit the debate on tariff liberalization and the claims of its positive impact on these variables. The analysis is divided into two periods, i.e. the pre-AFTA (ASEAN Free Trade Zone) period of 1970-1992 and the AFTA period of 1992 to 2013.The ASEAN-5 of Indonesia, Malaysia, the Philippines, Singapore, and Thailand have experienced a trend decline in tariffs, and rapid GDP, net FDI inflows, export and import growth over the period 1970-2013. Apart from Singapore, the remaining countries did not show a significant relationship between tariff deregulation and GDP growth in all the periods. The relationship in Singapore was significant in the period 1992-2013. The results suggest that other factors have played a more significant role than tariffs in GDP growth in these economies. In addition, the general argument that the liberalization of tariffs will foster net FDI inflows is not supported by the evidence from Malaysia, the Philippines and Singapore. Indonesia and Thailand showed that tariff liberalization Granger caused net FDI inflows in the long period of 1970-2013. However, there was no evidence to show that changes in tariffs influenced growth in net FDI inflows in the periods before and following the introduction of AFTA in 1992. The evidence shows that the statistical relationship between tariff reduction and export growth is significant for Indonesia and Thailand, and the ASEAN-5 as a whole over the 1992-2013 and 1970-2013 periods. Interestingly, the CEPT mechanism from the AFTA process appears important in driving exports in Indonesia and Thailand. That relationship was only significant for Malaysia over the 1970-2013 periods at the 10 percent level. Also, there was no evidence of a significant relationship between tariffs and exports in the Philippines and Singapore. There is no statistical evidence of a relationship between changes in tariffs and import growth in Indonesia, the Philippines and Thailand among the ASEAN-5. While it may be necessary for policy makers in Indonesia, the Philippines and Thailand to be concerned over the impact of tariff deregulation on import growth, such a sudden surge in imports could be a consequence of deregulation targeted at attracting FDI into the previously protected sector of automobile assembly and automotive components. While the statistical evidence is robust we have not controlled for the counterfactual, which is not possible using data. Overall, the results show a significant impact of tariff deregulation particularly on net FDI inflows, exports and imports in Indonesia and Thailand. However, the results also show that deregulation is not a panacea for stimulating rapid economic growth. In contrast to the claims of mainstream economics, several other factors matter, including government policy and the success they enjoy in stimulating structural change from low to high value added activities.

ABSTRAK

Tesis ini menijau secara empirik hubungan kausal antara perubahan dalam tarif, dan pertumbuhan Keluaran Dalaman Negara Kasar (KDNK), aliran masuk pelaburan asing (PA), eksport, dan import di negara-negara ahli asal ASEAN-5 pada tempuh 1970 hingga 2013. Matlamatnya adalah untuk mendekati debat terhadap liberalisasi tariff, danhujah bahawa ianya akan menghasilkan dampak yang positif ke atas pembolehubah ini. Analysis dibahagi kepada dua tempuh, iaitu tempuh pra-AFTA (Kawasan Dagangan Bebas ASEAN) pada 1970-1992 dan tempuh AFTA pada 1992 to 2013. Negara-negara ASEAN-5 Indonesia, Malaysia, Filipina, Singapura, dan Thailand telah mengalami tren penurunan tariffs, dan pertumbuhan pesat dalam KDNK, aliran masuk PA bersih, eksport and import dalam tempuh 1970-2013. Selain daripada Singapura, Negara-negara lain tidak menunjukan hubungan yang bererti antara deregulasi tarif dan pertumbuhan KDNK pada semua tempuh. Hubungan di Singapore bererti pada tempuh1992-2013. Keputusan ini memperlihatkan bahawa faktor lain telah berperanan lebih besar daripada tariff dalam mendukong pertumbuhan KDNK di Negara-negara ini. Di samping itu, hujah am bahawa liberalisasi tarif akan menarik aliran masuk PA bersih tidak disokong oleh bukti daripada Malaysia, Filipina, dan Singapura. Indonesia dan Thailand menunjukkan bahawa liberalisasi tariff menyebab Granger aliran masuk PA bersih dalam tempuh panjang 1970-2013. Namun, tiadanya bukti untuk menunjukkan bahawa perubahan tarif mempengaruhi pertumbuhan dalam aliran masuk PA bersih dalam tempuh sebelum dan setelah AFTA ditubuhan pada 1992.Bukti menunjukkan bahawa hubungan statistik yang bererti wujud antara penurunan tarif dan pertumbuhan eksport untuk Indonesia dan Thailand, dan ASEAN-5 sebagai suatu kumpulan pada tempuh 1992-2013 dan 1970-2013. MekanismaTarif Umum Berkesan Berfaedah (CEPT) daripada proses AFTA merupakan penting dalam memandu eksport di Indonesia dan Thailand. Hubungan itu hanya bererti pada paras 10 peratus untuk Malaysia pada tempuh 1970-2013. Tambahan pula, tiadanya bukti bererti yang menunjukkan kewujudan hubungan antara tarif dan eksport di Filipina dan Singapura. Tiada bukti statistik dalam hubungan antara perubahan tarif dan pertumbuhan import di Indonesia, Filipina dan Thailand antara negara ASEAN-5. Sementara pembentuk dasar di Indonesia, Filipina dan Thailand berwaspada terhadap dampak deregulasi tarif ke atas pertumbuhan import, pertumbuhan import yang mendadak dengan tiba-tiba mungkin disebabkan deregulasi yang berlangsung untuk menarik PA ke dalam sektor pemasangan automobil dan komponen automotif yang sebelum ini dilindung. Sementara bukti statistiknya bernas tidak terkawal daripada bukti sebaliknya, yang tidak dapat dibuat dengan data agregat. Secure keseluruhan, dapatan menunjukkan dampak yang bererti deregulasi tarif keatas aliran masuk PA, eksport dan import di Indonesia dan Thailand. Namun, dapatan juga menunjukkan bahawa deregulasi bukanlah satu panacea untuk mendorong pertumbuhan ekonomi yang pesat. Disebalik hujah arus perdana ekonomi, beberapa faktor lain adalah penting, termasuk dasar kerajaan dan kejayaan yang dinikmati dalam memandu peralihan struktur daripada nilai ditambah rendah kepada nilai ditambah yang tinggi.

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The purpose of completing this thesis has been self-achievements opposed to the pursuit of any particular career opportunities. I have gone through much hardship to complete this thesis as I am not based in Kuala Lumpur due to work assignment overseas (Europe & Asia Pacific), yet I am determined to complete this by 2015. Special thanks to Ibrahim and all colleagues for giving valuable input during the internal PhD classes conducted by Prof. Dr. Rajah Raisah. Also special thanks to Prof. Dr. Chandran, Dr. Santha and also not forgetting my wife Melanie. Also would like to thank University of Malaya, board of examiners (VIVA) has made much valuable progress and contribution toward the completion of this thesis. All the precious suggestions and kind assistance in improving this thesis means a lot to me, thank you.

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ABBREVIATIONS

AEC	ASEAN Economic Community
AFTA	ASEAN Free Trade Area
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of South East Asian Nations
ASEAN-5	Indonesia, Malaysia, Philippines, Singapore and Thailand
CEPT	Common Effective Preferential Tariff
CMLV	Cambodia, Myanmar, Laos and Vietnam
DC	Developed Country
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
GSP	General System of Preferences
HS	Harmonized System (HS) Code
IMF	International Monetary Fund
ISIC	International Standard of Industrial Classification
ISS	Import Substitution Strategy
IT	Index of Technology
LDCs	less Developed Countries
MFN	Most Favored Nations
ML	Maximum Likelihood
NIC	Newly Industrialized Country
OLS	Ordinary Least Squares
P1	AFTA Ex-Ante Period (1970-1991)
P2	AFTA Ex-Post Period (1992--2012)
P3	Overall Analysis Period (1970 to 2012)

RTAs	Regional Trade Agreements
SITC	Standard International Trade Classification
TFP	Total Factor Productivity
TSIC	ASEAN Standard Industrial Classification

CHAPTER 1: INTRODUCTION

1.1 Introduction

A free trade area (FTA) occurs when a group of countries agrees to eliminate tariffs among themselves but maintain their own external tariff on imports from the rest of the world. Because of the different external tariffs, FTAs generally develop elaborate "rules of origin". These rules are designed to prevent goods from being imported into the FTA member country with the lowest tariff and then transshipped to the country with higher tariffs. The ASEAN Preferential Trading Arrangement (PTA) was introduced in 1977 as the main instrument to promote intra-regional trade. The limited progress in PTA led to the formation of ASEAN free trade area (AFTA) in 1992. Arguably, it has since contributed to two decades of economic growth and the relatively rapid rates of industrialization among the ASEAN countries. The pace of economic growth that can be attributed to AFTA has been the focus of research for several economists. Yet, to date there is little work analyzing the relationship between AFTA and economic growth. In fact, there is a lack of research published to show how AFTA has impacted on ASEAN members.

While the prime relationship we investigate in this study is the link between economic and Gross Domestic Product (GDP), we also examine the influence of AFTA on FDI inflows, exports and imports among the pioneering ASEAN 5. Hence, this thesis examines the relationship influence of AFTA on GDP, foreign direct investment (FDI), exports and imports among the ASEAN 5. Being the founding members when the Association of Southeast Asian Nations (ASEAN) were founded in 1967, Malaysia, Indonesia, Thailand, Philippines and Singapore are referred to as the "ASEAN-5". All five countries have grown strongly, but their pace of growth was clipped during the 1985-86 economic crisis, 1997-98 Asian financial crisis and the 2008-09 global

financial crisis. Nevertheless, economic growth among these countries rebounded quickly.

Economic growth in all the five ASEAN-5 countries has generally been characterized by robust growth in capital accumulation. FDI has been one of the major contributors to capital accumulation in the five countries. The expansion of ASEAN to include Brunei and members from the transition economies has given the opportunity to establish a vertical division of labour on the basis of factor prices (Figure 1.1). This development has given the opportunity for greater FDI inflows among the ASEAN 5 as these countries can appropriate economic complementarities from regional integration synergies (see Rasiah, Kimura and Sothea, 2014; Rasiah and Yap, 2014). Indeed, economic synergies from regional complementariness are one of the main reasons driving the members to continue the ASEAN integration process.

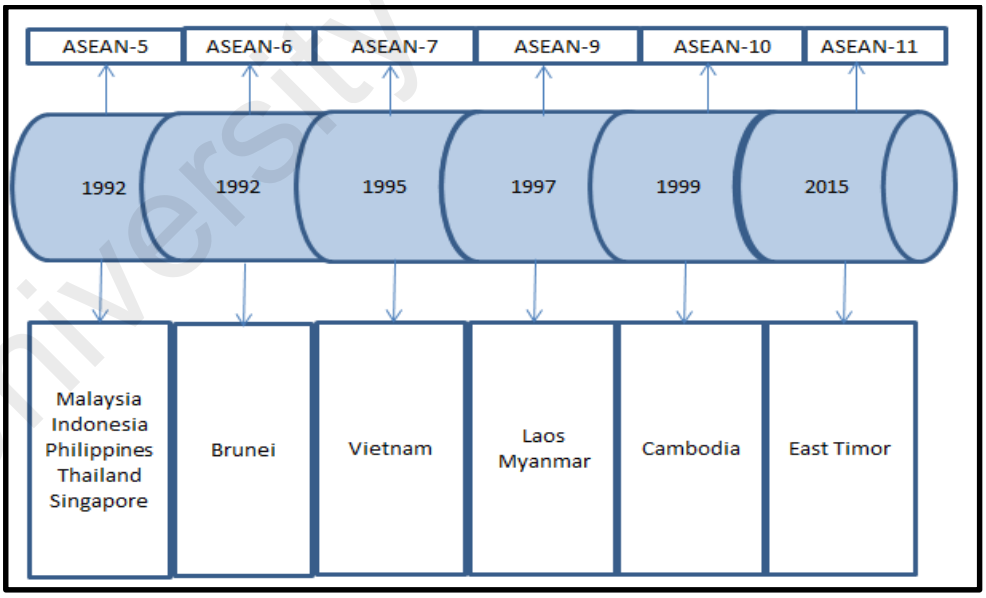


Figure 1-1: Expansion of ASEAN AFTA Members from 1992-2015
Source: Author (2015)

The theoretical case for the link between trade and economic growth was first proposed by Smith (1776) and Ricardo (1817). This framework was later developed into the

Heckscher-Ohlin model by Leamer (1995). However, the free trade Heckscher-Ohlin model was based on the assumptions of perfect mobility within borders and perfect immobility of capital and labour across country borders (see Rasiah, 2012). It was only after Bhagwati (1975) had relaxed the capital immobility condition that neoclassical models began to appreciate FDI flows across borders. Hence, trade integration invariably raises questions about trade flows (exports and imports of goods and services) and capital flows. Although foreign capital flows constitute both direct investment and portfolio equity flows we focus on FDI in this study. Therefore, this thesis focus on the impact of AFTA on economic growth, trade inflows and FDI inflows in the ASEAN-5 of Indonesia, Thailand, Malaysia, Singapore and the Philippines.

The ASEAN Secretariat (2011) categorically stated that trade liberation between ASEAN countries is critical for the region to sustain economic growth, and hence, called for greater initiatives to implement AFTA. However, investigations have showed mixed results. On the one hand, Baier and Bergstrand (2007) and Glick and Rose (2002) reported large positive trade creation among ASEAN members. On the other hand, Ghosh and Yamarik (2004), Frankel and Wei (1997), Sharma and Chua (2000) and Elliott and Ikemoto (2004) findings show that AFTA failed to lead economic growth. In light of these contradictory findings, we attempt using a robust methodology and by differentiating the periods the impact of AFTA on economic growth, and growth in its propellants of trade and FDI among the pioneering ASEAN-5. We chose to differentiate the periods by 1970-91 and 1992-2013 to distinguish the impact effects before and after the implementation of AFTA. We preferred this framework because of the lack of consistent and reliable information on trade by tariffs over the period 1970-2013 for the countries involved. In doing so we undertake the analysis keeping in mind the statistical

effect of faster growth rates in the initial years owing to smaller starting numbers compared to larger numbers in subsequent periods.

1.2 AFTA and Economic Growth

The debate over the benefits of AFTA on GDP and bilateral trade among ASEAN and non-ASEAN members has become increasingly important following the growing trend towards liberalization and export orientation. The ASEAN-5 has pursued trade liberalization for a number of reasons: one, to increase competition and the productivity gains; two, to achieve allocation efficiency gains; and three, record greater variety in consumption of goods and services. Although changes in GDP to a large extent reflects changes in the overall level of economic growth and not changes in welfare or living standards, we focus on GDP growth, and trade and FDI flows to keep the analysis manageable.

Table 1.1: GDP Growth Rates, Five-Year Averages, ASEAN-5 (%)

Countries	1975 - 1979	1980 - 1984	1985 - 1989	1990 - 1994	1995 - 1999	2000 - 2004	2005 - 2009	2010 - 2014
Indonesia	7.4	6.7	6	8	1.6	4.6	5.7	5.8
Malaysia	7.2	6.9	4.9	9.3	5.1	5.4	5.4	5.9
Philippines	6.2	1.3	2.7	1.9	3.6	4.6	5.1	6.1
Singapore	7.4	8.5	6.3	9.4	5.9	4.9	6.6	6.4
Thailand	8	5.6	9	9	1.4	5.1	4.3	3.8
ASEAN-5	7.2	5.8	5.8	7.5	3.5	4.9	5.4	5.6
ASEAN-5, average GDP growth rate before AFTA (1975-89)= 6.3								
ASEAN-5, average GDP growth rate after AFTA (1990-2014)= 5.4								

Source: IMF, World Bank, Global Development Finance (2015).

Economic growth enjoyed by ASEAN-5 ex-ante in the implementation of AFTA was remarkable with average annual growth of 6.3 percent per annum compared to only 5.4 percent per annum following the implementation of AFTA (see Table 1.1). Increased

sectoral specialization and the achievement of competitive advantage in resource-based and light manufactured exports has been argued to have contributed to these ASEAN economies' phenomenal GDP growth rates (see Rasiah, 1993, 1995). However, with the exception of Indonesia, GDP growth rates of the remaining 4 countries have generally slowed down since 1995.

Table 1.2: FDI Growth, ASEAN-5, 1976-1991

1979-1980	1981-1985	1986-1990	1991	Total (1976-91) USD Billion
1.93	1.18	2.99	1.5	7.6
2.79	5.41	5.63	4	17.83
0.37	0.31	2.46	0.5	3.64
2.89	6.74	16.66	4.9	31.19
0.49	1.4	5.94	2	9.83
8.47	15.04	33.68	12.9	70.09

Source: IMF, World Bank, Global Development Finance (2009).

Table 1.2 presents data on FDI inflows to the ASEAN-5 between 1976 and 1991. Three distinct features can be seen. Firstly, Singapore received the greatest amount of FDI inflows over the period, while the Philippines received the least in that period. Secondly, the total FDI inflows into the ASEAN-5 reached 70.09 billion USD before the implementation AFTA. Thirdly, the highest value of FDI inflows to the ASEAN-5 was recorded in the period 1986-90, which was boosted by FDI from Japan, South Korea, Taiwan and Singapore (see Rasiah, 1994, 1995). Rasiah (1989) reported that the appreciation of currencies of these countries following the Plaza Accord of 1985, the withdrawal of the Generalized System of Preferences (GSP) from the Asian Newly industrializing countries in February 1988 and the devaluation of the Baht, Rupiah, Ringgit and Filipino Peso were among the reasons that attracted massive FDI to the region.

Table 1.3: FDI Growth, ASEAN-5, 1992-2011

Countries	1992-1996	1997-2001	2002-2006	2001	Total (1992-11) USD Billion
Indonesia	16.43	-4.96	14.69	19.2	45.36
Malaysia	23.79	15.54	20.34	12	71.36
Philippines	6.05	7.19	7.5	12	32.74
Singapore	36.66	69.22	80.29	63	249.17
Thailand	9.69	17.9	31.94	77	136.53
Total	92.62	104.89	154.76	183.2	535.47

Source: IMF,World Bank, Global Development Finance (2009)

FDI inflows to the ASEAN-5 increased tremendously after the introduction of AFTA. In nominal prices FDI inflows over the period 1992-2012 reached USD537 billion against USD70 billion over the period 1970-91. The jump in FDI inflows after 1992 is significant even after adjusting for changes in prices. The importance of FDI in the region has previously been documented by Ariff (1991) and Rasiah (1995). Rasiah (1994, 1995) and Haddad (2007) in particular have documented the significant flows of technology into the ASEAN-5 through FDI inflows. Based on Figure 1.2 below, on average, FDI as a percentage of GDP increased from 28 percent in the period of 1990-1999 to 52 percent in 2000-2006 among the broader group of ASEAN members. Except for Indonesia, all other countries experienced rising average shares of FDI in GDP. At the same time, exports as a percentage of GDP rose from 46 percent in 1990-1999 to 62 percent in 2000-2006.

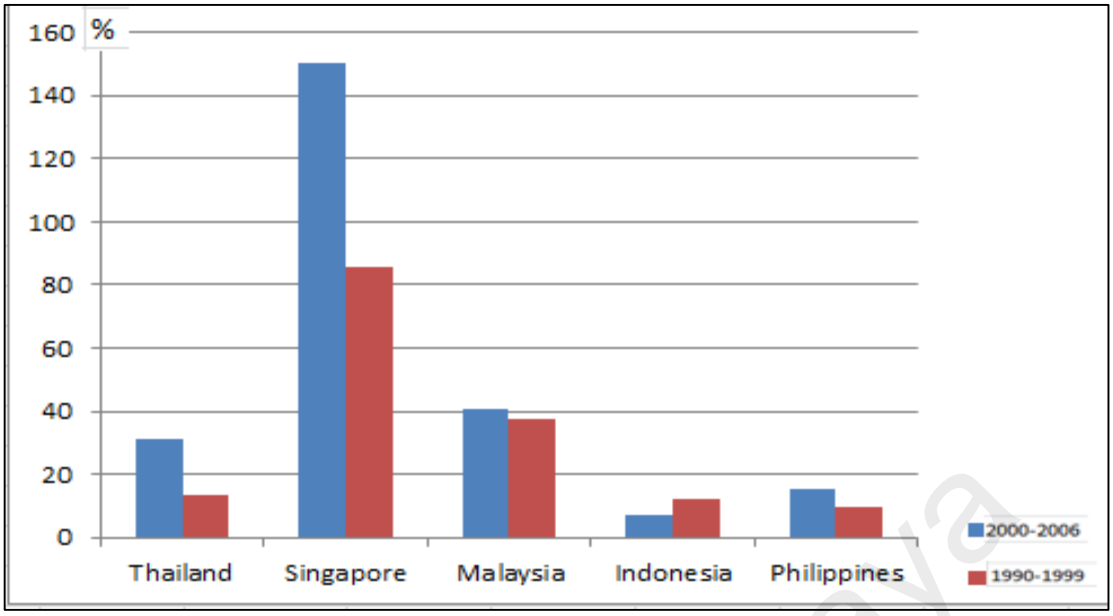


Figure 1-2: FDI Growth as a Share of Gross Domestic Product ASEAN, 1990-2006 (%)
Source: IMF-World Economic Outlook, 2007.

All the ASEAN countries also witnessed an increase in their average export shares. It can also be argued that the ASEAN-5 countries benefitted strongly from technology inflows through imports. Kien and Hazimoto (2005) found that AFTA members have not transferred their import transaction from non-member trading partners to trading partners, which means that there has been no import trade diversion over the period of 10 years since AFTA was established. One possible interpretation is that the dynamic network of domestic production, together with FDI projects in AFTA countries, has caused these countries to prefer imports from non-members outside the region. However, Damuri, Atje and Gaduh (2006) found that in 2002, the weighted preferential tariffs (through the CEPT scheme) were higher than MFN tariffs, which suggests that the import values of products whose CEPT tariffs are lower than MFN tariffs were not significant relative to total imports, which somewhat substantiates the findings that CEPT tariffs have been underutilized. Hence, by way of tariff reduction, AFTA did not enjoy fully its desired effect.

1.3 Key Variables

The four variables examined in this thesis are GDP, FDI, exports and imports. Hence, we discuss briefly how the ASEAN-5 fared with respect to these variables in the period and the period after AFTA was introduced.

1.3.1 Gross Domestic Product

The ASEAN-5 together the highest GDP growth rate in 1979 over the 1979-2008 period (see Figure 1.3). While the years 1984-85 were characterized by a contraction, the 1979-93 enjoyed fairly strong GDP growth. The 1994-2012 period was hit seriously by the 1997-98 Asian financial crisis when overall GDP of the ASEAN-5 together contracted by 32% in 1997. Apart from 2000 when overall GDP contracted again, GDP expanded in the subsequent years. Even during the 2008-09 global financial crisis the contraction of GDP of individual countries, such as, Malaysia did not affect the ASEAN-5's overall GDP growth. GDP data was drawn from the World Bank (2015) and Asian Development Bank (2015).

Figure 1-3: ASEAN-5 GDP Growth Period (1979-2008)
Source: Plotted from Asian Development Bank (2013).

Overall, the average GDP growth in the first period was 10 percent compared to 9 percent in the subsequent period. The GDP of the individual economies fared

differently. Singapore was the only economy that did not suffer a contraction in GDP, while Indonesia, Malaysia, the Philippines, and Thailand experienced negative GDP growth rates in 19997-98. Indonesia was the worst affected (Rasiah, 2009). Among the ASEAN-5 Singapore and Thailand enjoyed the highest mean GDP growth in the first period (see Table 1.4). At 15 percent and 12 percent respectively the GDP growth rate of Singapore and Thailand significantly exceeded the commensurate growth rates of 8 percent and 6 percent respectively in the second period. The GDP growth rate of Malaysia was even in both periods at 9 percent. Indonesia and the Philippines enjoyed higher GDP growth rates in the second period than in the first period.

All the ASEAN-5 economies grew fairly rapidly over the 1970-2013 period (Table 4.1). Annual average GDP growth rates of all of them were stronger in the 1970-92 period compared to the 1992-2013 period. In addition to the smaller starting base in 1970 compared to 1992, these economies also faced a double crisis in the second period compared to just one in the first period. GDP growth rates plummeted in the mid-1980s with Malaysia and Singapore recording negative GDP growth rates in 1985 following a global slowdown in demand (Rasiah, 1993). These economies faced a contraction in GDP in 1997-98 following the Asian financial crisis, and in 2008-09 following the global financial crisis. Whereas the first arose when currency traders successfully attacked the baht, ringgit, rupiah and peso as Indonesia, Malaysia, Philippines and Thailand ran chronic balance of payments deficits while the second culminated from a contraction in export demand as the United States imploded with the contagion spreading to other economies (Mahani and Rasiah, 2009; Rasiah, Yap and Chandran, 2014).

Singapore enjoyed the highest annual average GDP growth rates in 1970-92 (8.5 percent) and 1992-2013 (5.9 percent). Thailand (7.6 percent), Indonesia (7.3 percent)

and Malaysia (7.1 percent) enjoyed the next highest growth rates in 1970-92. The Philippines faced the lowest annual average GDP growth rate of 3.5 percent in 1970-92. Thailand recorded the lowest annual average GDP growth rate in 1992-2013 largely because of the 1997-98 financial crisis (Pongpaicihit and Baker, 1998; Rasiah, 2000).

Table 1.4: Annual Average GDP Growth Rate, ASEAN-5, 1970-2013

Country	1970-1992	1992-2013
Indonesia	7.3	4.6
Malaysia	7.1	5.3
Philippines	3.5	4.3
Singapore	8.5	5.9
Thailand	7.6	3.8

Source: Computed from World Bank (2014).

In addition to a tariff liberalization trend experienced by the ASEAN-5 since 1970, the exercise to analyze its impact on GDP is also the more important as all the countries have experienced fairly strong annual average GDP growth rates. The comparison of the periods before and after the introduction of AFTA is also useful as these countries are the pioneering ASEAN members.

1.3.2 Foreign Direct Investment

FDI is widely accepted as a vehicle for economic growth. FDI in UNCTAD's definition is divided into three components: Equity capital, Reinvested earnings, and other capital (mainly intra-company loans). FDI can bring in scarce capital because of their inability to generate internal savings to meet their investment needs. Moreover, one of the most cited reasons for the high economic growth in Southeast Asia in the recent era is due to the inflows of FDI (Ariff, 1991). It is hard to dispute that FDI is one of the most effective ways by which developing economies can integrate with rest of the world, as it provides not only capital but also technology and the management know-how necessary for structural change (Rasiah, 1995). FDI is assuming a prominent role in the

development and growth strategies more so because of inadequate resources to finance development projects. Because of its presumed benefits to the host country economies, proponents of FDIs, such as the World Bank and International Monetary Fund (IMF) strongly encourage countries to attract more FDIs as a way of stimulating and increasing efficiency of resource allocation. In addition, it is argued that FDI enhances economic growth through technology spillover, creates employment, reduces dependence on accumulation of debt as a source of development financing and enhances human capital and entrepreneur skills. Thus, in the face of ASEAN-5 growth challenges, the country is now pursuing domestic policies that are geared at attracting more FDI. FDI inflows data was drawn from the Asian Development Bank (2015).

1.3.3 Trade – Exports and Imports

Arguably the most important objective of AFTA was to stimulate growth in trade. Trade was calculated by adding imports to exports. Overall, the period after AFTA was launched enjoyed an increase in trade but grew less 24 per cent than in the period before AFTA with 160 percent (see Table 1.5). Indeed, trade grew much less in the period after than the period before in Malaysia, the Philippines and Thailand. Trade recorded negative growth rates in the period after in Indonesia and Singapore. Since the poorer performance of trade in the ASEAN-5 can also be attributed to the externally driven global financial crisis of 2007-08, one could also argue that it could have been worse if not for the AFTA process. Also, the domestic economies of these countries have also expanded to provide internal demand to support production.

The Table 1.5 shows the comparison of trade growth value against the GDP and FDI growth in percentage. Based on this statistical data the trend indicate decline in trade

value after the AFTA implementation for all countries. Export and import data used in this thesis was drawn from Asian Development Bank (2015).

Table 1.5: GDP, FDI and Trade Growth, ASEAN-5, Before and After AFTA

Growth Factors	GDP %			FDI %			Trade Value Growth rate %		
	Before	After	Diff	Before	After	Diff	Before	After	Diff
ASEAN-5	10	9	-1	20	11	-9	160	24	136
Indonesia	9	12	3	22	10	12	30	-16	-14
Malaysia	9	9	0	22	40	18	8	2	-6
Philippines	6	8	2	14	60	46	55	29	-26
Singapore	15	8	-7	27	20	-17	21	-3	-18
Thailand	12	6	-6	44	21	-23	46	12	-34

Source: Author (2015).

At the ASEAN-5, aggregate level the GDP and FDI growth after AFTA implemented has declined probably new members like CLMV entries into ASEAN membership impact the trade value growth rate.

The key focus in this chapter is to examine econometrically the impact of changes in tariffs on export and import volume of the five pioneering ASEAN economies. Before we do that we first analyze in this section export trends of the ASEAN-5 over the period 1970-2013 to justify the selection of the ASEAN-5 for a test of the relationship between changes in tariffs towards exports and import. Since we have already analyzed the importance of tariff liberalization in these economies earlier the focus in this section is only on exports. We analyze the average annual growth in exports before and after the introduction of AFTA in 1992. The assessment will also offer the opportunity to examine exogenous events arising from external shocks.

As shown in Table 1.6 exports grew fasters in the period 1970-92 compared to 1992-2013. In addition to the lower starting base in 1970 the growth in world trade following

the opening of China since 1978, and the transition economies of Vietnam, Laos, Cambodia and Myanmar from the second half of the 1980s saw a shift in focus to the newly reforming economies (Rasiah, 2009). Also, South Korea and Taiwan had also switched from import-substitution to export-orientation in a number of industries from the 1980s. Also, a slowdown in the global economy affected export growth in all the five economies in 1984-86 and 2008-2010. The former caused by overproduction in critical commodities such as electronics products, and the latter a sharp contraction in external demand following the implosion of the United States' economy and its contagion on Europe (Rasiah, Yap and Chandran, 2014). Thailand enjoyed the highest growth in exports in both 1970-92 (15.9 percent) and 1992-2013 (9.2 percent) followed by Singapore with 15.4 percent and 9.1 percent respectively in 1970-92 and 1992-2013.

Table 1.6: Annual average growth rate on Export, ASEAN-5, and 1970-2013

Country	1970-1992	1992-2013
Indonesia	14.8	8.2
Malaysia	14.1	8.3
Philippines	10.3	7.6
Singapore	15.4	9.1
Thailand	15.9	9.2

Source: Computed from World Bank (2014)

Despite the impact of external shocks, the rapid growth in exports over both periods present the ASEAN-5 as excellent examples to analyze the relationship between changes in tariffs and exports. Hence, we proceed to examine this link econometrically in the next section.

1.4 Tariffs and Trade Openness

The effects of international trade on economic growth have been the subject of intense debate. Still, the main question of whether (and how) trade enhances growth remains vague, as the conclusions of both theoretical and empirical studies are highly sensitive

to changes in the assumptions made, the variables used to measure trade openness, the sample data used, and the econometric technique employed (see, for example, Grossman & Helpman, 1991; Matsuyama, 1992; Rasiah, 1995; Walde & Wood, 2005; Rodriquez & Rodrik, 2001; Yannikkaya, 2003).

Notably, most of the analysis on this debate involves trade measures regarding export and import volumes or shares, trade policies regarding tariffs or custom barriers, and related measures of trade openness. Little or no attention has been given to the direction of trade strategies. Empirical measures of trade characteristics or trade patterns and configurations have been fraught with problems stemming from measurement problems associated with tariff structures. Southeast Asia's experiment with regionalism has resulted in rapid reduction in tariffs between ASEAN member countries but there is little information on the volume of trade going through each of these tariffs.

Table 1.7: Tariffs in ASEAN-5, 1992-2002

Countries	Simple average				Weighted Average			
	MFN		CEPT		MFN		CEPT	
	1992	2002	1992	2002	1992	2002	1992	2002
ASEAN 5	15.33	7.11	13.22	5.72	10.12	2.69	9.3	5.52
Indonesia	21.77	11.32	14.38	5.87	15.3	6.92	11.87	5.46
Malaysia	11.17	5.92	N/A	5.37	5.75	1.52	N/A	5.3
Philippines	13.41	7.04	12.38	5.95	7.79	1.84	3.01	5.88
Singapore	19.73	9.22	12.33	5.84	13.94	3.98	9.81	5.46
Thailand	11.92	4.94	14.06	5.7	7.79	2.62	7.01	6.07

Source: UNCTAD Trains, accessed through WITS (2007)

Table 1.7 above presents the mean tariffs by the institutional mechanism for the ASEAN-5 countries. Taking simple averages of tariffs for CEPT, intra-regional tariffs in ASEAN5 fell from 13.2 percent to 5.7 percent over the period from 1992 to 2002. All tariff data are nominal and were drawn from Asian Development Bank (2015).

The Most Favored Nation (MFN) tariffs declined in ASEAN-5 from 15.3 percent in 1992 to 7.1 percent in 2002. Meanwhile, in 2002 the weighted preferential tariffs were higher than that of MFN tariffs – for ASEAN-5 overall and for individual ASEAN member countries except Indonesia - which suggests that the import values of products whose Common Effective Preferential Tariff (CEPT) are lower than MFN tariffs but they are not significant relative to total imports which substantiates the findings that CEPT tariffs have been underutilized (Tongzon, 2003; Baldwin, 2006). Hence, by way of tariff reductions, the ASEAN-5'sexperiment with regionalism have not particularly benefited directly from the lowering of tariff rates, though this interpretation does not take account of the counterfactual in the absence of liberalization.

Several other studies have gone beyond the simple measure of trade. Dollar (1992), Sachs and Warner (1995) and Wacziarg (1998), for example, created their own indicators of openness. However, as pointed out by Rodriquez and Rodrik (2001), these measures might not achieve the purpose for which they were conceived since they are not cognizant of a wide range of policy and institutional differences. The measures of the number of trading partners and the concentration of trade used in this paper, in contrast, are clearly related to trade and are simple to interpret. Tariffs declined further following the introduction of AFTA. Yet, GDP, FDI inflows, and trade either contracted or slowed down following the introduction of AFTA.

1.5 Theoretical Considerations

Before we examine the empirical evidence, we consider theoretically here the likely gains and losses from the implementation of AFTA. The analysis makes the same assumptions as classical trade theory, which begins with the assumptions of perfect competition, i.e., prices reflect opportunity cost; factors of production are immobile

between countries; trade is balanced (*i.e.* no balance of payments problems), and there is full employment of resources. The trade creation effect of AFTA is composed of two parts: firstly a production effect which consists of the substitution of cheaper 'foreign' goods for domestic goods from within the Union, and secondly a consumption effect consisting of the gain in consumer surplus from cheaper goods. The trade diversion effect is also composed of two parts: firstly, the substitution of higher priced goods from within the Union for goods outside the Union, and secondly the loss of consumer surplus that this entails.

We assume in each case that there are three countries in the world: Countries Malaysia (A), Thailand (B), and Japan (C.) Each country has supply and demand for a homogeneous good in the representative industry. Countries A and B will form a free trade area. (Note that trade diversion and creation can occur regardless of whether a preferential trade agreement, a free trade area, or a customs union is formed. For convenience, we'll refer to the arrangement as a free trade area [AFTA].) The attention in this analysis will be on Country A, one of the two FTA members. We'll assume that Country A is a small country in international markets, which means that it takes international prices as given. Countries B and C are assumed to be large countries (or regions). Thus Country A can export or import as much of a product as desired with Countries B and C at whatever price prevails in those markets. We assume that if Country A were trading freely with either B or C, it would wish to import the product in question. However, Country A initially is assumed *not* to be trading freely. Instead, the country will have an MFN-specific tariff (i.e., the same tariff against both countries) applied on imports from both Countries B and C. In each case below, we will first describe an initial tariff-ridden equilibrium. Then, we will calculate the price and welfare effects that would occur in this market if Countries A and B form an AFTA.

When the AFTA is formed, Country A maintains the same tariff against Country C, the non-AFTA country.

In general, a trade diversion means that a free trade area diverts trade away from a more-efficient supplier outside the FTA and toward a less-efficient supplier within the FTA. In some cases, trade diversion will reduce a country's national welfare, but in some cases national welfare could improve despite the trade diversion. We present both cases below.

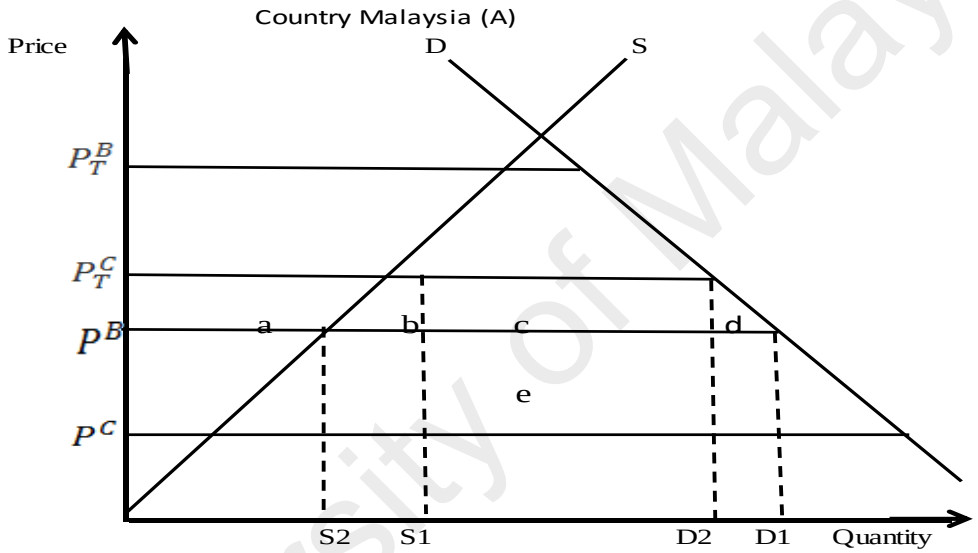


Figure 1-4: Trade Integration

Source: Book Policy and Theory of International Trade v. 1.0, (2012)

Figure 1.4 Trade Integration, depicts the case in which trade diversion is harmful to a country that joins an FTA. The graph shows the supply and demand curves for Country A. P^B and P^C represent the free trade supply prices of the good from Countries B and C, respectively. Note that Country C is assumed to be capable of supplying the product at a lower price than Country B. (Note that in order for this to be possible, Country B must have tariffs or other trade restrictions on imports from Country C, or else all of B's market would be supplied by C.)We assume that A has a specific tariff $t^B = t^C = t*$ set on imports from both Countries B and C. The tariff raises the domestic supply prices

to P_T^B and P_T^C, respectively. The size of the tariff is denoted by the green dotted lines in Figure 1.4 Trade Integration which show that $t* = P_T^B - P^B = P_T^C - P^C$.

Since, with the tariff, the product is cheaper from Country C, Country A will import the product from Country C and will not trade initially with Country B. Imports are given by the red line, or by the distance $D^1 - S^1$. Initial tariff revenue is given by the area ($c + e$), the tariff rate multiplied by the quantity imported. Next, assume Countries A and B form an FTA and A eliminates the tariff on imports from Country B. Now, $t^B = 0$, but t^C remains at $t*$. The domestic prices on goods from Countries B and C are now P^B and P_T^C, respectively. Since $P^B < P_T^C$, Country A would import all the product from Country B after the FTA and would import nothing from Country C. At the lower domestic price, P^B, imports would rise to$D^2 - S^2$, denoted by the blue line. Also, since the non distorted (i.e., free trade) price in Country C is less than the price in Country B, trade is said to be diverted from a more-efficient supplier to a less-efficient supplier.

The welfare effects are summarized in Table 1.8 Welfare Effects of Free Trade Area Formation.

Table 1.8 Welfare Effects of Free Trade Area Formation

Welfare	Country A
Consumer Surplus	+(a + b + c + d)
Producer Surplus	a
Govt. Revenue	-(c + e)
National Welfare	+ (b + d) -e

Source : Author (2015)

Free trade area effects on Country A's consumers. Consumers of the product in the importing country benefit from the free trade area. The reduction in the domestic price of both the imported goods and the domestic substitutes raises consumer surplus in the market. Refer to Table 1.8 Welfare Effects of Free Trade Area Formation and Figure

1.4 Trade Integration ASEAN-5 " to see how the magnitude of the change in consumer surplus is represented.

Free trade area effects on Country A's producers. Producers in the importing country suffer losses as a result of the free trade area. The decrease in the price of their product on the domestic market reduces producer surplus in the industry. The price decrease also induces a decrease in the output of existing firms (and perhaps some firms will shut down), a decrease in employment, and a decrease in profit, payments, or both to fixed costs. Refer to Table 1.8, Welfare Effects of Free Trade Area Formation and Figure 1.4 Trade Integration ASEAN-5, to see how the magnitude of the change in producer surplus is represented. Free trade area effects on Country A's government. The government loses all the tariff revenue that had been collected on imports of the product. This reduces government revenue, which may in turn reduce government spending or transfers or raise government debt. Who loses depends on how the adjustment is made. Refer to Table 1.8, Welfare Effects of Free Trade Area Formation and Figure 1.4 Trade Integration to see how the magnitude of the tariff revenue is represented.

Free trade area effects on Country A's national welfare. The aggregate welfare effect for the country is found by summing the gains and losses to consumers, producers, and the government. The net effect consists of three components: a positive production efficiency gain (*b*), a positive consumption efficiency gain (*d*), and a negative tariff revenue loss (*e*). Notice that not all the tariff revenue loss (*c* + *e*) is represented in the loss to the nation. That's because some of the total losses (area *c*) are, in effect, transferred to consumers. Refer to Table 1.8,Welfare Effects of Free Trade Area Formation and Figure 1.4 Trade Integration to see how the magnitude of the change in national welfare is represented.

Because there are both positive and negative elements, the net national welfare effect can be either positive or negative. Figure 1.4 Trade Integration depicts the case in which the FTA causes a reduction in national welfare. Visually, it seems obvious that area *e* is larger than the sum of *a* and *b*. Thus, under these conditions, the FTA with trade diversion would cause national welfare to fall. If conditions were different, however, the national welfare change could be positive. Figure 1.5 on the benefits of trade integration differs from Figure 1.4 on trade integration, only in that the free trade supply price offered by Country B, P^B, is lower and closer to Country C's free trade supply price, P^C. The description earlier concerning the pre and post FTA equilibrium remains the same, and trade diversion still occurs. The welfare effects remain the same in direction but differ in magnitude. Notice that the consumer surplus gain is now larger because the drop in the domestic price is larger. Also notice that the net national welfare effect, $(b + d - e)$, visually appears positive. This shows that in some cases, formation of an FTA that causes a trade diversion may have a positive net national welfare effect. Thus a trade diversion may be, but is not necessarily, welfare reducing.

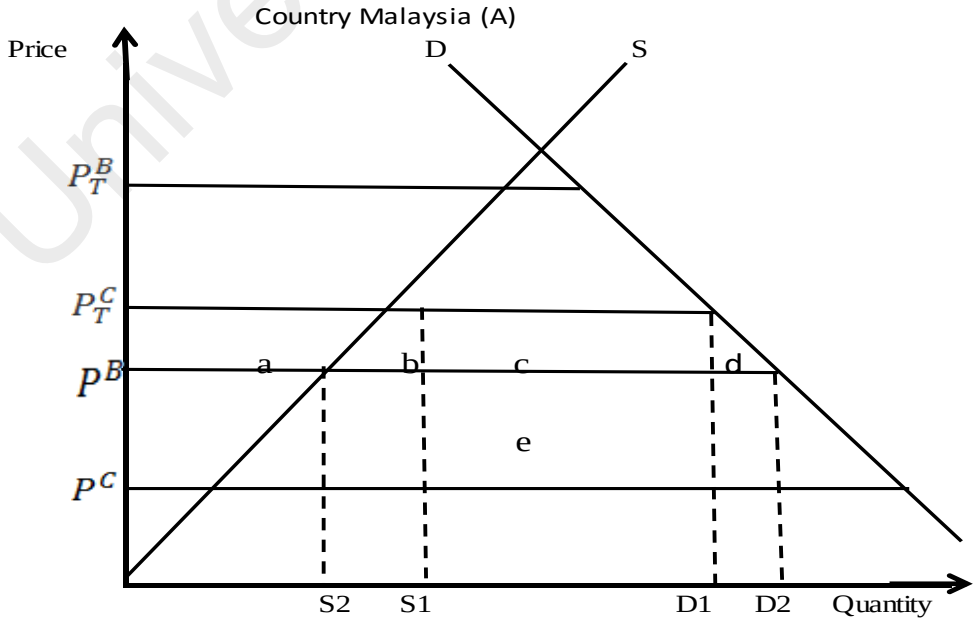


Figure 1-5: Beneficial of Trade Integration

Source: Book Policy and Theory of International Trade v. 1.0, (2012)

In general, trade creation means that a free trade area creates trade that would not have existed otherwise. As a result, supply occurs from a more-efficient producer of the product. In all cases, trade creation will raise a country's national welfare. Figure 1.6, Trade Creation, depicts a case of trade creation. The graph shows the supply and demand curves for Country A. P^B and P^C represent the free trade supply prices of the good from Countries B and C, respectively. Note that Country C is assumed to be capable of supplying the product at a lower price than Country B. (Note that in order for this to be possible, Country B must have tariffs or other trade restrictions on imports from Country C, or else all of B's market would be supplied by C.)

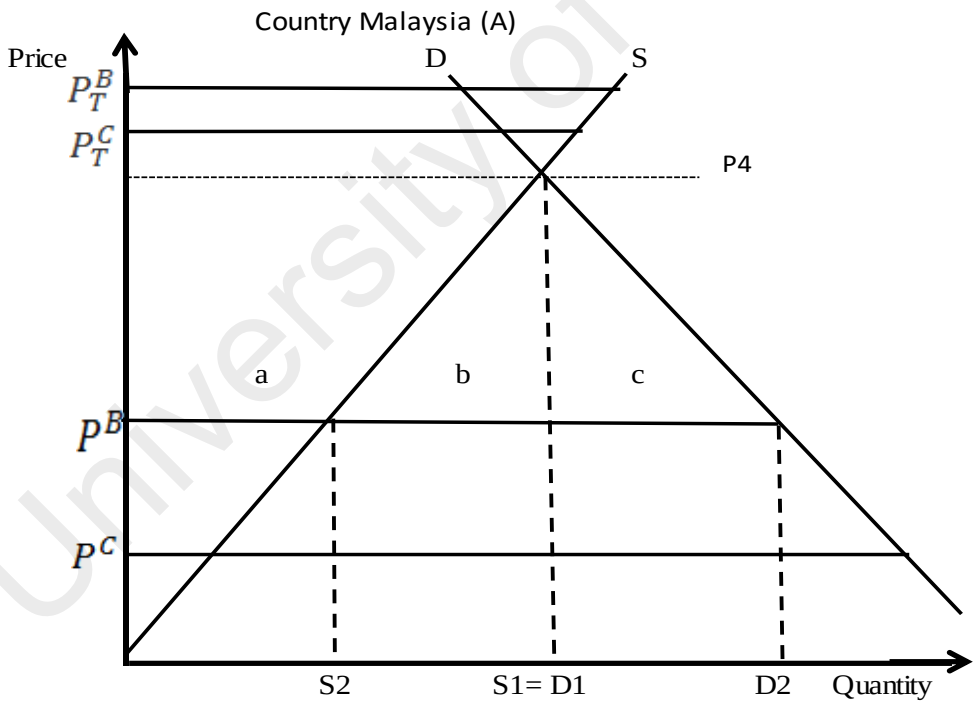


Figure 1-6 ASEAN -5, Trade Creation

Source: Book Policy and Theory of International Trade v. 1.0, (2012)

We assume that A has a specific tariff, $t^B = t^C = t*$, set on imports from both Countries B and C. The tariff raises the domestic supply prices to P_T^B and P_T^C, respectively. The size of the tariff is denoted by the green dotted lines in Figure 1.6, Trade Creation which show that $t* = P_T^B - P^B = P_T^C - P^C$. Since, with the tariffs, the autarky price in Country A, labeled P^A in Figure 1.6 Trade Creation, is less than the tariff-ridden prices P_T^B and P_T^C, the product will not be imported. Instead, Country A will supply its own domestic demand at $S^1 = D^1$. In this case, the original tariffs are prohibitive.

Next, assume Countries A and B form an FTA and A eliminates the tariff on imports from Country B. Now $t^B = 0$, but t^C remains at $t*$. The domestic prices on goods from Countries B and C are now P^B and P_T^C, respectively. Since $P^B < P^A$, Country A would now import the product from Country B after the FTA. At the lower domestic price P^B, imports would rise to the blue line distance, or $D_2 - S_2$. Since trade now occurs with the FTA and it did not occur before, trade is said to be created. The welfare effects are summarized in Table 1.9, Welfare Effects of Free Trade Area Formation: Trade Creation Case.

Table 1.9 Welfare Effects of Free Trade Area Formation: Trade Creation Case

Trade Benefit	Country A
Consumer Surplus	+ (a + b + c)
Producer Surplus	- a
Government Revenue	0
National Welfare	+ (b + c)

Source: Author 2015

Free trade area effects on Country A's consumers. Consumers of the product in the importing country benefit from the free trade area. The reduction in the domestic price of both imported goods and the domestic substitutes raises consumer surplus in the market. Refer to Table 1.9 Welfare Effects of Free Trade Area Formation: Trade Creation Case and Figure 1.6, Trade Creation to see how the magnitude of the change in consumer surplus is represented. Free trade area effects on Country A's producers.

Producers in the importing country suffer losses as a result of the free trade area. The decrease in the price of their product in the domestic market reduces producer surplus in the industry. The price decrease also induces a decrease in output of existing firms (and perhaps some firms will shut down), a decrease in employment, and a decrease in profit, payments, or both to fixed costs. Refer to Table 1.9 Welfare Effects of Free Trade Area Formation: Trade Creation Case and Figure 1.6, Trade Creation to see how the magnitude of the change in producer surplus is represented.

Free trade area effects on Country A's government. Since initial tariffs were prohibitive and the product was not originally imported, there was no initial tariff revenue. Thus the FTA induces no loss of revenue. Free trade area effects on Country A's national welfare. The aggregate welfare effect for the country is found by summing the gains and losses to consumers and producers. The net effect consists of two positive components: a positive production efficiency gain (*b*) and a positive consumption efficiency gain (*c*). This means that if trade creation arises when an FTA is formed, it must result in net national welfare gains. Refer to Table 1.9 Welfare Effects of Free Trade Area Formation: Trade Creation Case and Figure 1.6 Trade Creation to see how the magnitude of the change in national welfare is represented.

Apart from trade creation and trade diversion, AFTA may also have other important effects associated with the enlargement of the market, which are neglected by the static analysis presented above. Firstly, the larger market may generate economies of scale. If there are economies of scale, the supply curves in Figure 1.6 will slope downwards, and the common external tariff can be lower than the original tariff in both partner countries. There will be a normal trade creation effect and a cost saving in both countries. Secondly, integration is likely to promote increased competition which is likely to affect

favorably prices and costs, and the growth of output. Thirdly, the widening of markets within an ASEAN-5 is likely to attract international investment. Producers will prefer to produce within the union rather than face a common external tariff from outside. Fourthly, the economies of scope have been wider and technologies spillover occurs due to FDI inflows. Trade liberalization through the lowering of CEPT tariff rates has also created trade block with MFN tariff lines.

Finally, if the world supply of output is not infinitely elastic, there are terms of trade effects to consider. Specifically, if there is trade diversion, the world price of the good will fall, moving the terms of trade in favor of the AFTA. This term of trade effect represents a welfare gain which may partly offset the welfare loss of trade diversion. However, because the ASEAN-5 impose a common external tariff they are likely to be inferior, in terms of welfare improvement, to a policy of unilateral tariff reductions (continuing to make the standard assumptions of trade balance, full employment etc.). The conclusion from this theoretical analysis is that the formation of the Customs Unions represents a movement towards free trade, but even free trade (*i.e.* no trade diversion) is better than the previous trade regime.

1.6 Problem Statement

The general experience of regional trade agreements in developing countries has been disappointing because they have been highly inward-looking and protectionist with trade diversion exceeding trade creation. Such problems partly arise from contradictory national interests pursued by members. However, in open economies like the ASEAN-5, the existing ratio of trade to GDP has been high in the member countries and the ratio of trade with the rest of the world has also been high so that the scope for trade creation has been minimal and the potential for trade diversion has been great. Recent empirical

work across developing countries as a whole supports this pessimistic conclusion as far as regional trade agreements are concerned, but finds that broad trade liberalization does lead to faster growth. Research by de Melo, Panagariya and Rodrick (1993) finds no evidence that regional integration among developing countries exerted a positive effect on income and economic growth. In another work, Vamvakidis (1998) tried to estimate the effect on growth of the size and openness of neighbouring countries, and finds that countries which have neighbours with large open economies experience faster growth. Openness matters more than size. Being near a developed country also has a positive spill-over effect.

Trade liberalization does not necessarily translate into faster export growth, but in practice the two appear to be highly correlated. The impact of trade liberalization on economic growth as outlined above probably works mainly through improved efficiency and export stimulation, which have powerful effects on both supply and demand in an economy. However, the impact of falling tariffs in ASEAN-5 is too complex to be analyzed by simple instruments. There are push and pull factor that have contributed to economic growth due to the lowering of tariffs. We will discuss this in chapter 3. There are several different measures of trade liberalization or trade orientation, and all studies seem to show a positive association between trade liberalization and economic performance. Although several different studies show a positive relationship between exports and GDP growth, the relative importance of the precise mechanisms by which export growth impacts on economic growth are not always easy to discern or quantify.

It is clear from the foregoing discussion that the post-AFTA growth rates in GDP, FDI inflows and Trade have largely been lower than in the pre-AFTA phase, though it the other way around in some members of the ASEAN-5. It is also clear that that dramatic changes have taken place in the ASEAN-5 tariff policies since 2000.Notable advances

were made in reducing the general or most favoured nation (MFN) tariffs through commitments made under the General Agreement on tariff and Trade (GATT) World Trade Organization (WTO) multilateral trade negotiations. Following the formation of AFTA, total trade among ASEAN countries increased from US$ 44.2 billion in 1993 to US$ 95.2 billion in 2000, showing an annual increase of 11.6 percent. Intra-ASEAN exports made up about 23.3 percent of total ASEAN exports to the world. Before the financial and economic crisis struck in mid-1997, intra-ASEAN export was increasing at 29.6 percent. This is significantly higher than the rate of increase of total ASEAN exports to the world, which grew at 18.8 percent during the same period. However, the economic impact of lowering the CEPT tariff is still unclear, especially whether changes were specifically due to the introduction of the CEPT mechanism.

Bilateral trade between member countries also shows an increase in exports both in absolute value and as a share of total trade in world. Prior to the establishment of AFTA, Indonesia's exports to the ASEAN countries amounted to only 10 percent of its total exports while Philippines' exports to ASEAN amounted to just 7 percent. After the establishment of AFTA, Indonesia increased its export to the ASEAN-5 countries to 20 percent while the Philippines increased its exports to 13 percent, reaching in dollar value almost three times higher when compared to the pre AFTA period. Kien and Hazimoto (2005) found that even if there's an increase in bilateral trade between member countries, AFTA has not given rise to export trade diversion. One plausible explanation for this is that export-oriented strategies have been an engine of economic growth in these countries (see Rasiah, 2009). Moreover, the characteristics of production and consumption in all member countries may have led them to persistently aim at non ASEAN members as their export destinations. The annual average growth of GDP of the ASEAN-5 was around 5 per cent in 1981-2007, which is expected to fall

gradually over the period 2011-2020 and 2021-30 as the base figure continues to expand (Table 1.10; Figure 1.7).

Table 1.10: Average Annual GDP Growth, ASEAN-5, 1981-2030 (%)

	Actual				Projections	
ASEAN -5	1981-1990	1991-2000	2001-2007	1981-2007	2012-2020	2021-2030
Indonesia	5.68	4.11	4.51	4.8	4.66	4.12
Malaysia	5.85	7.4	5.14	6.24	5.51	4.79
Philippines	2.02	3.76	4.81	3.39	5.96	5..53
Thailand	7.54	3.71	4.85	5.42	4.01	3.58
Singapore	7.00	7.84	4.86	6.76	5.24	3.28

Source: Calculations from Heston, Summers, and Aten (2009): ILO (2010): Barro and Lee (2010)

The Figure 1.7, show the forecast result for Indonesia, Malaysia and Philippines promises as country will operate at optimal level for year 2020. Since the liberalization of the economy in the 1990s, the growth for ASEAN-5 shows stability for long term economic growth.

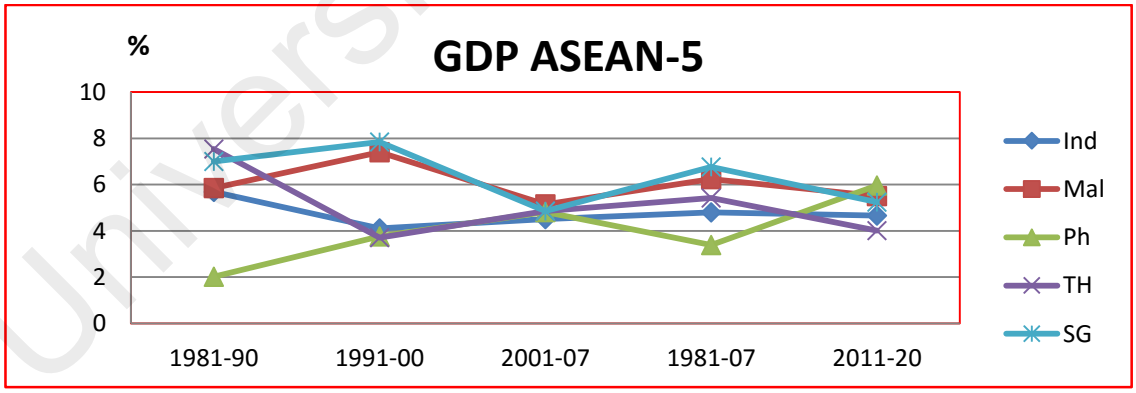


Figure 1-7: Shows the actual growth and forecast economic growth for ASEAN -5, 1981 to 2020.

Source: Calculated from Heston, Summers, and Aten (2009): ILO (2010): Barro and Lee (2010)

There are a number of research papers that have explored the relationship between AFTA and economic growth among ASEAN-5 members. The empirical evidence,

however, is mixed making it inconclusive as the studies do not capture the right time frame between1970 to 2014. Whether the increase in the economic growth rate before and after the liberalization of trade policy for ASEAN-5 was mirrored by similar growth increases in countries that did not liberalize their trade policy is a central question. For example, Richard (2007) found that the growth rate in the period before liberalization was not statistically different from the period after liberalization when compared to that experienced by countries that did not liberalize their trade policies over the same period. The studies so far produced three different conclusions, i.e. unidirectional causality (either from FDI to economic growth or from economic growth to FDI), bidirectional (from FDI to economic growth and vice versa) and no causality between the two different forms.

Therefore, this study seeks to compare the performance of AFTA between the two phases by differentiating the periods using 1992 as the watershed year when AFTA was introduced. The trend shows that there is a sharp decline in tariff rates among the ASEAN-5 countries after 1992 (see Figures 1.8 to 1.10). Figure 1.8 indicates that tariff rates in Indonesia declined over the period from 1993 to 2007. The tariff rate fell to below 5 percent in 2007.

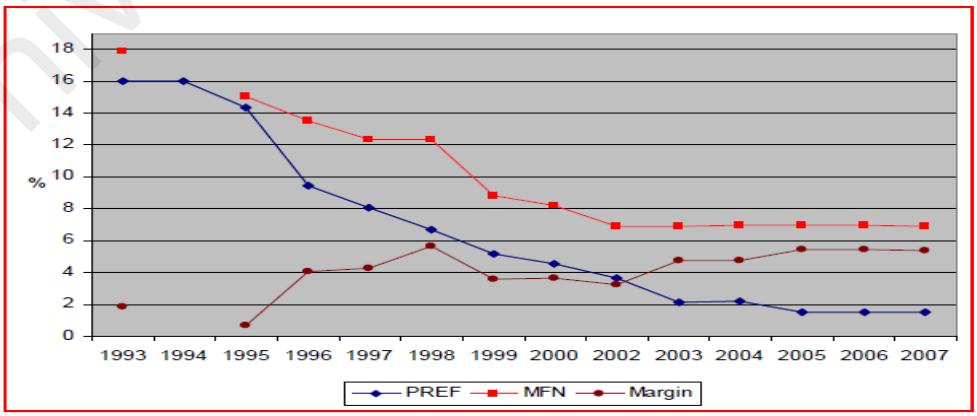


Figure 1-8: Average Tariff Rate, Indonesia, 1990-2007 (%)

Source: Trade Liberalization Unit ASEAN, 2010

Figure 1.9 shows the same with Malaysia as mean tariffs fell to less than 1 percent in 2007.

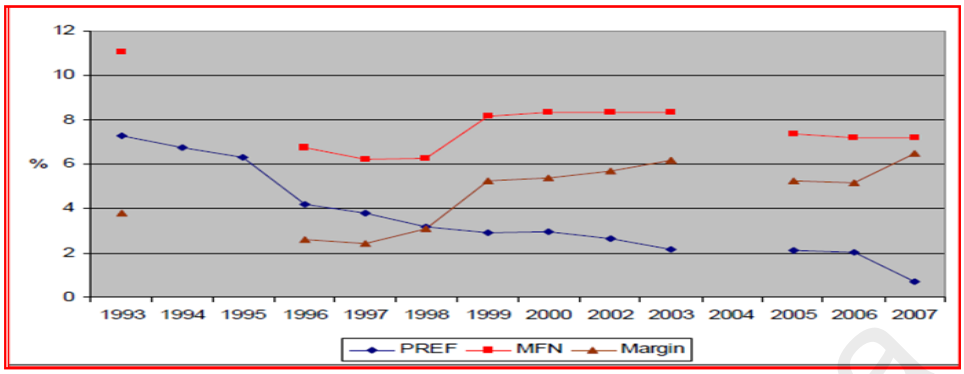


Figure 1-9 : Average Tariff Rate, Malaysia, 1993 to 2007 (%)

Source: Trade Liberalization Unit ASEAN, 2010.

The Philippines has rapidly liberalized from 1993 to 2007 where the CEPT has reduced from 25 percent to below 5 percent. The continuation has seen where some of the product in tariff line has achieved 0 percent tariff rate.

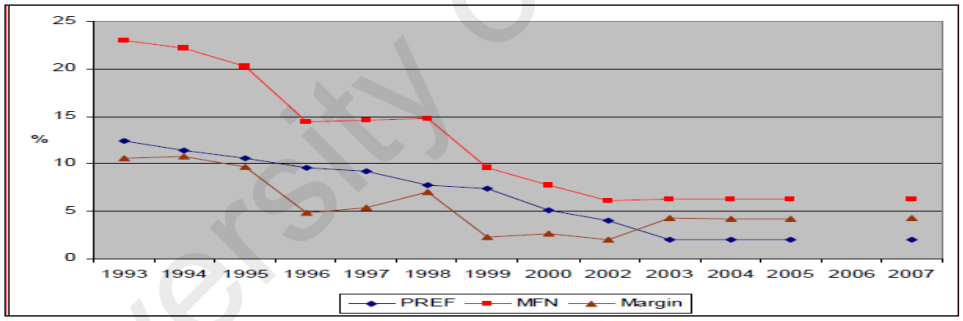


Figure 1-10 : Mean Tariff Rates, Philippines, 1993-2007

Source: Trade Liberalization Unit ASEAN, 2010

Mean tariffs in the Philippines have also fallen significantly over the period 1993-2007 (see Figure 1.9). Tariff rate; applied; simple mean; all products (%) in Philippines was last measured at 3.31 in 2010, according to the World Bank.

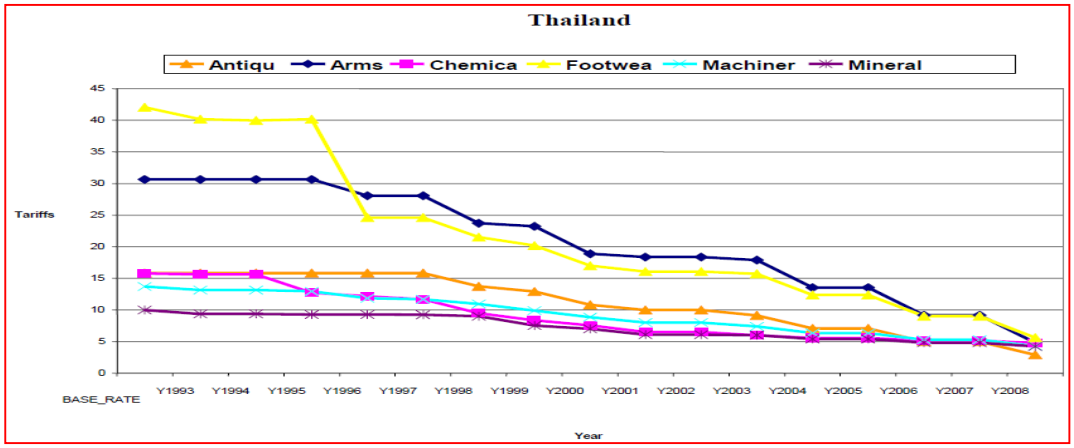


Figure 1-11 : Average Tariff Rates, Thailand Selected Sectors, 1993-2008

Source: Trade Liberalization Unit ASEAN, 2010

Thailand managed to reduce mean tariffs to below 5 percent for all major sectors in the period 1993-2008 (Figure 1.10). All the ASEAN-5 countries had reduced tariff rates to below 5 percent by 2008. Thus, it is important to examine if the fall in CEPT and MFN tariff rates has had a bearing on GDP growth, FDI and trade. A common development is the bigger market that has resulted from the AFTA process. While the common market and efforts to coordinate investment and trade flows has emerged among these countries, such collaboration often broke down during moments of crisis. The Asian financial crisis of 1997-98 is one example where economic collaboration declined (Rasiah, 2001). Also, member countries still attempt to compete to attract FDI from abroad. The competition has become stiffer since emergence of China and India as growth nodes in the regional economy. Also, the high growth rate of inter-ASEAN FDI inflows of the late 1980s and 1990s tapered off following the ASEAN-China and ASEAN-India trade collaboration initiatives. Table 1.11 indicates a slight drop in the share of FDI in Gross Fixed Capital Formation (GFCF) in 2005 due to competition from other countries. The average growth rates of FDI in ASEAN-5 suffered a negative growth from 2001 to 2004 before showing positive growth again in the year 2005. The

Asian Financial Crisis and fierce competition from China and India during the period after AFTA implementation had caused a decrease in FDI inflows.

Table 1.11: FDI/GFCF, ASEAN-5, 1970-2005 (%)

Year	ASEAN-5 (FDI/GFCF)
1970	2.41
1975	6.19
1980	5.88
1985	4.37
1990	12.04
1995	12.19
2000	21.46
2005	19.23

Source: Author's compilation from UNCTAD and IFS, various years.

Table 1.11 shows that the ASEAN-5 managed to enjoy positive growth in FDI inflows, GFCF and GDP from 1970 to 2005 due to cheap labor and low production cost. After 1997, FDI inflows and GDP have experienced slower growth rates. While the Asian financial crisis started the slowdown the persistence of slow growth can also be attributed to the exhaustion of labour reserves in Malaysia and Thailand, and the emergence of the CMLV economies.

Table 1.12: Mean Growth Rates, FDI, GFCF and GDP, ASEAN-5, 1970-2005(%)

Five Years Period	FDI	GFCF	GDP
1971-1975	25.97	10.13	19.36
1976-1980	17.42	8.62	14.04
1981-1985	-8.39	5.95	0.98
1986-1990	33.95	7.3	11.33
1991-1995	14.15	6.46	10.61
1996-2000	-0.88	6.19	-5.63
2001-2005	10.97	11.53	9.04
Ten Years Period			
1971-1980	20.37	12.46	18.81
1981-1990	13.2	14.31	4.87
1991-2000	7.11	13.5	3.32

Source: computed from UNTAD and IFS, various years

Based on the Table 1:12 the FDI inflows, GFCF and GDP for ASEAN-5 have fallen following the Asian financial economic crisis and structural change from 1991 to 2000, hence it is important to analyze the endogenous effect of FDI on economic growth. Does AFTA integration bring about endogenous effects throughout ASEAN-5 or, is it just confined to the ASEAN-5 countries? The ASEAN-5 also faces challenges from the CMLV countries, who have managed to attract strong FDI inflows because of their natural resources, labour endowments and preferential access through their status as Least developed Countries (LDCs). Also, these countries have slower liberalization timelines.

The manufacturing sector has also benefited considerably from FDI inflows. While services have become the most important sector in Singapore and Malaysia since 1990 and 2008 respectively, manufacturing was a key engine of growth for a few decades in both countries until then (Rasiah, 1995, 2010). Meanwhile, manufacturing has remained important in Indonesia, the Philippines and Thailand. Table 1.13 summarizes the share of manufacturing in GDP in the ASEAN-5 over the period 1970-2004.

Table 1.13: Proportion of Output of Manufacturing Sectors to GDP in ASEAN-5, 1970 to 2004

	Manufacturing Sector						
ASEAN-5	1970	1980	1990	2000	2002	2003	2004
Indonesia	9.33	11.64	20.66	27.75	28.72	28.25	28.07
Malaysia	12.23	20.64	24.22	30.86	29.25	29.93	30.38
Philippines	22.64	24.81	24.83	22.23	23.09	23.26	23.05
Singapore	20.44	28.59	27.1	25.76	23.72	21.3	24.76
Thailand	16.03	19.83	27.2	33.59	33.69	34.84	34.49

Source: Author computed from UNCTAD and ADB, various years (2010)

Alfaro (2003) found that FDI inflows into three different sectors of the economy (primary, manufacturing and services) exert different effects on economic growth. He found that FDI inflows into the manufacturing sector give positive effect on economic

growth. A one percent increase in FDI in the manufacturing sector leads to a 1.7 percent increase in manufacturing GDP growth.

The growing proportion of manufacturing output over the period between1993 to 2011(P2) is much greater compared to the earlier period from 1970 to 1992 (P1). It is therefore crucial that the effect of FDI and economic integration on the manufacturing sectors of ASEAN-5 is examined carefully. With the exception of Singapore, there are sufficient reasons to believe that the developments of most Southeast Asian economies are more or less similar in nature with little direct relationship between tariff liberalization and economic growth. However, within the broad framework of export-orientation industrial promotion has varied significantly in these countries. Ariff and Hill (1985), for example, concluded their study on ASEAN export-oriented industrialization by saying that the international economy will have an important bearing on future growth rates the ASEAN economies. However, the critical determining factors of success for most of the ASEAN countries will continue to be domestic economic policies. In another context, Myint (1972: 36) also suggested that the best way to achieve development was for the underdeveloped countries to pursue their own domestic economic policies to improve their capacity to 'absorb' the available aid and trade opportunities. In short, those who can get their domestic policies right have a better chance to succeed in their quest to industrialize and develop. However, it should be noted that these studies did not systematically address economic growth due to AFTA implementation.

To manage he liberalization process while at the same time preventing its abuse through imports from countries outside ASEAN, AFTA initially relied on the 40 percent regional content rule, but the alternative criterion of a tariff-classification change at the HS 4-digit level was added in 1995. The evidence for the utilization of ASEAN trade

preferences is mixed. Baldwin (2006) reported that the utilization rates of AFTA were very low at around 3% of intra-regional trade. However, a study by the Thai Office of Industrial Economics (2006) reported that, among products with CEPT rates below the MFN rates, the average utilization rate in 2006 was 51.2 percent of the value of Thai exports to ASEAN countries while it was 26.9 percent of the value of Thai imports from ASEAN countries. These findings may be consistent in that Baldwin's figure was ASEAN-wide, and, since Singapore dominates intra-ASEAN trade and has zero MFN tariffs on almost all products, preferences are irrelevant for much of Singaporean trade and, by extension, much of intra-ASEAN trade. So, in effect, the non-use of preferences in Singaporean trade and its heavy weight age in intra-regional trade may have diluted the high Thai utilization rate and resulted in a low region-wide average utilization rate.

Despite the diverse historical origins and the different environments surrounding the ways in which each economy began its development process, one fact that remains clear is why almost all of the ASEAN-5 members have experienced rapid economic growth. Despite higher tariffs outside the ASEAN region, the ASEAN-5 economies have been successfully integrated into the global economy as measured using trade as a proportion of GDP. Both the contribution of exports and net-exports to growth are significantly higher in the ASEAN-5 countries than the South Asian countries. Also, trade with non-ASEAN members is also higher than in trade ASEAN trade. The relative success that ASEAN countries have achieved in terms of export growth and structural change is a reflection of the greater success of the Southeast Asian countries in eliciting a stronger and wider export response. This has enabled the Southeast Asia countries to increase their integration with the global economy.

Several studies have examined the underlying reasons for ASEAN-5 superior trade and economic performance. Undoubtedly there are numerous factors that have contributed to the greater ability of Southeast Asian countries to adjust to trade reforms, for

example, better institutions, human capital, infrastructure, differences in labour policy, capital market policy and differences in the extent of service liberalization. The AFTA process has been classified largely as a success from the viewpoint of trade and investment liberalization, export growth and structural adjustment.

The number of ASEAN members increased after the establishment of AFTA in 1992, which was a consequence of strong economic growth enjoyed by the pioneer members. Economic synergies from the pioneering members coupled with the fall of the Soviet Union (and with that the interest in socialism) attract the CLMV countries of Cambodia, Laos, Myanmar and Vietnam. We have excluded the CLMV countries from the study because they joined AFTA later.

1.7 Research Questions

We address four research questions in this thesis to analyze the economic impact of AFTA on the ASEAN-5. They are as follows:

1. How has the AFTA process influenced GDP growth in the ASEAN-5?
2. How has the AFTA process influenced FDI inflows into the ASEAN-5?
3. How has the AFTA process influenced export growth in the ASEAN-5?
4. How has the AFTA process influenced import growth in the ASEAN-5?

The answers to the above four questions is expected to provide us with the evidence to determine if the AFTA process has stimulated economic gains in the ASEAN-5.

1.8 Objectives of the Study

It is important to the see the causal relationship between mean tariff and economic growth in order to see the performance within a country as well at aggregate level ASEAN-5. In addition, this paper will explore the causal relationship between FDI, export, import and GDP growth which can contribute to economic growth. The thesis also offers a baseline assessment of economic growth under the MFN and CEPT tariff

reduction schemes by focusing on the relationship between tariff liberalization, and GDP, FDI, export and import in the ASEAN-5 over the period from 1970 to 2013.

Overall, this thesis seeks to analyze the impact of AFTA on GDP, FDI inflows and trade in the ASEAN-5. The focus is on the impact of liberalization on these economies. We rely on detailed data on CEPT and MFN tariffs at the product level for all the five pioneering ASEAN members from 1970 till 2012.

1.9 Thesis Outline

The rest of the thesis is organized as follows. Chapter 2 discusses the literature review. Chapter 3 illustrates the methodology and data used in the study. It contains the analytic framework and model specification of the study, as well as, the data used. Chapters 4, 5, 6 and 7 are analytical chapters representing each null hypothesis. Chapter 4 analyzes the impact of AFTA liberalization on GDP growth. Chapter 5 assesses the impact of AFTA process on FDI inflows. Chapter 6 examines the impact of AFTA deregulation on export and import growth. Chapter 7 discusses the overall results of trade openness in the ASEAN-5. Finally, the conclusions of the thesis are presented in chapter 8.

1.10 Significance of Study

The significance of this thesis is to contribute to the literature on trade liberalization by providing empirical evidence over the impact of AFTA on economic growth in the ASEAN-5 countries. Krueger (1998) argued from the fact that trade strategies and development strategies are interrelated. Her findings support the view that trade liberalization is linked with high growth rates. Krueger further claims that there are always benefits from trade liberalization when in combination with an export oriented strategy and lower trade barriers. The export oriented policies; external openness and integration in the world economy are some of the key indicators associated with

enhanced economic growth. These findings provide evidence for correlation between liberalized trade policies and growth for ASEAN-5. This study covers the actual time frame of before and after AFTA implementation and the implication toward economic growth. There are limited studies available for before and after AFTA implementation impact towards economic growth. This will provide answers for developing countries that question the impact of trade liberalization on regional economic growth.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter introduces the issues and reviews past empirical evidence on the linkage between trade liberalization and economic growth. Theoretically, the causality between export and imports and economic growth may run in either direction. Furthermore, bidirectional causality may exist between tariff deregulation, and growth in GDP, FDI, exports and imports among the ASEAN-5 following the implementation of AFTA. Nevertheless, the pattern of economic growth and the impact of the AFTA process on GDP, FDI, exports and imports can be evaluated through a comparative economic study of the periods before and after AFTA implementation.

To manage preferential trade among ASEAN exporters, AFTA initially relied on the 40 percent regional content rule (rule of origin), but the alternative criterion of a tariff-classification change at the HS 4-digit level was added in 1995. The evidence for the utilization of ASEAN trade preferences is mixed. Baldwin (2006) reported that the utilization rates of AFTA were very low at around 3 percent of intra-regional trade, but a study by the Thai Office of Industrial Economics (2006) reported that, among products with CEPT rates below the MFN (Most-Favored Nation) rates, the average utilization rate in 2006 was 51.2 percent of the value of Thai exports to other ASEAN countries, while it was 26.9 percent of the value of Thai imports from other ASEAN countries. These findings may be consistent in that Baldwin's figure was ASEAN-wide and, since Singapore dominates intra-ASEAN trade and has zero MFN tariffs on almost all products, preferences are irrelevant for much of Singaporean trade and, by extension, much of intra-ASEAN trade. Therefore, in effect, the non-use of preferences in Singaporean trade, coupled with its heavy participation in intra-regional trade may have

diluted the high Thai utilization rate and resulted in a low region-wide average utilization rate.

Besides the effect of the Singaporean trade regime on trade preference utilization, there are also other reasons for a low region-wide average utilization rate. Manchin and Pelkmans-Balaoing (2007) noted three problems related to the CEPT's rule of origin, which may explain the low average utilization rate of the CEPT scheme. Firstly, the CEPT scheme is relatively complex with MFN and CEPT tariff rates varying by product and individual ASEAN countries. However, to reduce uncertainty in preferences, ASEAN countries have published their MFN and CEPT tariffs three years in advance. Secondly, ASEAN exporters have had difficulty accumulating the required 40%regional content. Thirdly, the CEPT's administrative and compliance requirements are cumbersome as they lack transparency and uniformity. However, Manchin and Pelkmans-Balaoing (2007) found that preferential tariffs stimulated intra-ASEAN trade when they were at least 25 percent lower than MFN tariffs. According to the ASEAN Statistical Yearbook (2006), in 1999, intra-ASEAN trade was US$132 billion, and by 2003 it was US$206 billion, which represents a 56 percent increase. As a share of total ASEAN trade, intra-regional trade was 21 percent in 1999 and 25 percent in 2003. As such, it appears, at the aggregate level, that AFTA may have increased intra-regional trade in the early 2000s. Richard (2007) indicates that among average developing countries, the post liberalization growth rate is significantly higher than that experienced before liberalization. This could be true if trade liberalization occurs simultaneously with common shocks to the world economy (positive or negative) or other policy changes. Sachs and Warner (1995) and Winters (2004) have previously highlighted the possible influence of other policy reforms on estimates of post-liberalization growth but without considering the non-liberalizing period, while Slaughter (2001) has used a

similar methodology to compare periods of trade liberalization amongst OECD countries. It is clear that the CEPT scheme has been key to intra-ASEAN trade liberalization

2.2 The relationship between AFTA and GDP growth

GDP growth is the prime measure of economic growth. Most works show that openness to trade and foreign investment has a positive impact on GDP growth (Kreuger, 1980; Bhagwati, 1978). Indeed, Rasiah (2010) argued with evidence that export-oriented industrialization was a key driver of economic growth in the ASEAN market economies. Economic growth in the ASEAN-5 may also benefit from further integration in AFTA. Although the ASEAN-5suffered a major financial crisis in 1997-98 the shock strengthened the grouping and its relationships with China, Japan and South Korea. The steps taken to be vigilant of future crisis include efforts to reduce dependence on the US dollar, and the promotion of regional currencies, policy transparency and greater disclosure. ASEAN remains steadfast in pushing for an open trade regime and investment environment. Despite the economic crisis in Europe, such on the impulsion of Greece and weakening of US currency, the ASEAN-5 has remained economically stable. It is mainly believed that AFTA has contributed significantly to the development of the ASEAN-5.Economic growth by Gross Domestic Product (GDP) per capita of country “i” over time “t” generally measured by changes in GDP per capita is chosen because it is or simply changes in GDP over time which takes into account of the changes in population.

In Cho’s model, however, GDP growth is examined using the Malmquist productivity index. However, statistical data released by the Asian development bank in 2015 indicated that the entire group of the pioneer ASEAN members enjoyed significant GDP

growth rates after year 2009 (see Table 2.1). It will be interesting to analyze if this GDP growth has been driven by AFTA

Table 2.1: GDP Growth %, ASEAN-5 (2008-2014)

Country	2008	2009	2010	2011	2012	2013	2014
Malaysia	4.8	-1.5	7.2	5.1	5.6	5.3	5.5
Indonesia	6	4.6	6.2	6.5	6.2	6.4	6.6
Philippines	4.2	1.1	7.6	3.9	6.6	6	5.9
Thailand	2.5	-2.3	7.8	0.1	6.4	4.9	5
Singapore	1.7	-0.8	14.8	5.2	1.3	2.6	3.7

Source: Asian Development Bank Outlook (2015)

According to the Asian Development Bank (ADB), most of developing Asia will likely see their economies improve on increased domestic demand and a modest recovery in GDP growth; overall GDP is above rise 6 per cent in 2012 except Singapore with growth rate 2.6 per cent. ADB has projected for year 2016 ASEAN-5 will grow at a steady 5 per cent supported by a strengthening recovery in the major industrial economies and soft global commodity prices. Besides global demand, intraregional demand is indeed empirically found to be an important driver of ASEAN-5 growth where Indonesia to be found 6.6 per cent growth for the year 2014, the Philippines with 5.9 per cent while Malaysia , Thailand and Singapore with GDP growth rate respectively with 5.5 percent , 5.0 percent and 3.7 per cent. Here we can conclude that after AFTA implementation the GDP for ASEAN-5 more sustainable.

2.3 The Relationship between AFTA and FDI Growth

The intensity of FDI in an economy is normally measured by the ratio of FDI inflows over the Gross Fixed Capital Formation (GFCF). FDI inflows are considered to be a major stimulate of economic growth, and hence, it will be useful to examine if the AFTA process has stimulated greater FDI inflows into the ASEAN-5. Borensztein

Gregorio & Lee (1998) examined the relationship between FDI and economic growth in 69 developing countries over the period spanning from1970 to 1989. They found that FDI has a positive impact on economic growth, but that the nexus is partly dependent on the availability of human capital in the host country. Li and Liu (2005) found similar results from a sample of 84 countries over the period 1970-1999. Obwona (2001),as well as Bengoa and Sanchez-Robles (2003) suggested that, for FDI to have positive impact on economic growth, the host country must have macroeconomic and political stability, policy credibility, and an increase in the openness of their economy. Coe, Helpman, E., and Hoffmaister (1997) found a positive association between FDI and economic growth, but suggested that the host country should have attained sufficient level of development to help it to reap the benefits of higher productivity.

The ASEAN-5 countries were among the top recipients of Japan's, Korea's and Taiwan's FDI in the period 1985-90 as their currencies appreciated following the Plaza Accord of 1985 (Rasiah, 1995). From Figure 5.1, the trend continued much of the 1990s, but fell in 1997-98 following the break out of the Asian Financial Crisis (Rasiah, 2000). However, since the turn of the millennium, Japan has reoriented its investment target to the other ASEAN countries namely Cambodia, Myanmar, Laos and Vietnam (CMLV countries). Therefore, average FDI inflows growth per annum to the ASEAN-5 slowed down from 20 per cent in 1970-92 to 11 per cent in 1992-2013.

Table 2.2 shows FDI inflows into the five individual pioneering market economies of ASEAN over the period 1970-2013. Despite the crippling financial crisis years of 1997-98 and 2008-09 the annual average FDI inflow only fell slightly in period P2 (20.3 per cent) compared to period P1 (24.5 per cent) per annum. Average annual FDI inflows to Malaysia slowed down considerably in period P2 (7.6 per cent) compared to period P1

(39.6 per cent) per annum. Being among the first countries in the developing world to develop its infrastructure and to offer financial incentives, as well as, political stability helped Malaysia attract massive FDI inflows in the 1970s and 1980s (Rasiah, 1995). The failure to upgrade into higher value added activities in the face the emergence of competing sites, such as China and the CLMV countries explain a fall in FDI inflows (Rasiah, 2011).

Despite enjoying the highest FDI inflow in 1970 among the five ASEAN market economies, its annual average growth rate recorded -3.4 per cent in P1 (see, Table 2.2). The quelling of the communist rebellion and a focus on export-oriented industrialization following the Fidel Ramos regime helped raise annual average FDI inflow growth in period which also supported by Ofreneo (2010). By far the strongest average annual FDI inflows growth among the pioneering ASEAN-5 was recorded by Singapore, which was 30.2 per cent per annum in the period P1 and 32.4 per cent in the period P2. FDI inflows into Thailand also enjoyed remarkably high levels. Annual average FDI inflows into Thailand was much higher in P1 (38.1 per cent) than in P2 (16.1 per cent) though despite massive inflows of Japanese FDI inflows into automotive manufacturing in period P2 (Patarapong, 2014).

Table 2.2: Annual Average Net-FDI inflow growth, ASEAN-5, 1970-2013

ASEAN-5	1970-1992	1992-2013
Indonesia	24.5	20.3
Malaysia	39.6	7.6
Philippines	-3.4	14.3
Singapore	30.2	32.4
Thailand	38.5	16.1

Source: Computed using data from International Monetary Fund, International Financial Statistics Yearbook 2015 (Washington,D.C.,2015).

Zhang (2001) tested the FDI-led growth hypothesis in East Asian and Latin American countries to show that FDI causes economic growth in some countries while economic growth causes FDI in others. Carkovic and Levine (2002) analyzed the relationship between FDI and economic growth in a sample of 72 countries and found that FDI does not exert any independent influence on economic growth in either developed or developing countries. The importance of FDI should be higher in the developing countries rather than the developed countries because of their inability to generate internal savings to finance development. Moreover, one of the most cited reasons for the high economic growth in Southeast Asia in the recent era is due to the inflows of FDI (Rasiah, 2010). It is true that FDI is one of the most effective ways by which developing economies can integrate with the rest of the world as it provides not only capital but also technology and management know-how necessary for restructuring the firms in the host countries (Rasiah, 1995; Pradhan, 2006). FDI usually helps to achieve developmental goals such as closing the savings-investment gap by contributing much-needed capital for investment (Vadlamannati, Tamazian & Irala 2009).

Wang (2002) examined the nexus between FDI and economic growth in a sample of 12 Asian countries over the period 1987-1997. He suggested that FDI in the manufacturing sector has a significant positive impact on economic growth and attributes this positive contribution to FDI's spillover effects. Choe (2003) found bi-directional causality between FDI and growth for a sample of 80 countries over the period 1971-1995, but suggested that the effect is more apparent from economic growth to FDI. Chowdhury and Marvrotas (2005) examined the causal association between FDI and growth from Chile, Malaysia and Thailand. They find unidirectional causality from economic growth to FDI in Chile and a two-way causation between the two in Malaysia and Thailand. Duasa (2007) found no causal relationship between FDI and economic growth in

Malaysia, but suggested that FDI does contribute to stability of growth. The above findings give the evidence that the nexus between FDI and economic growth is far from straight forward (Vu and Nov, 2009). It varies from country to country and even within countries over different time periods.

The two-way link between FDI and economic growth stems from the fact that higher FDI inflows stimulate economic growth in the host country. Consequentially, higher economic growth in the host countries attracts more FDI. The empirical evidence on the relationship between FDI and economic growth, however, provides very contradictory results. Karimi and Yusop (2009) found co-integration between FDI and economic growth in Singapore and Thailand, both at the individual level, and in a panel of five ASEAN countries. The results confirm that FDI and economic growth share a long run relationship in the ASEAN countries, which indicates that there is possibility of a causal relationship occurring between FDI and economic growth. Moreover, the existence of no co-integration between the two variables in Indonesia, Malaysia and the Philippines does not mean the absence of a causal relationship or any relationship in the short run. Among countries whose economic growth and FDI inflows do not move together in the long run (i.e. co-integration), they may affect each other in the short run. Therefore, we can develop the null hypothesis that economic growth is a function to FDI inflows. Additionally, an assumption can be made that economic growth has a positive relationship with FDI.

Most published works examine the relationship, either between the GDP and exports, GDP and FDI, or exports and FDI. Despite their interrelationships (Bhagwati, 1978; Krueger, 1980). Relatively few published empirical works deal with causal relations between these three variables simultaneously among a group of countries, and fewer

works have used panel data VAR causality analysis techniques. Several papers on individual country studies have examined the Granger causality direction of GDP, FDI and trade. For example, Liu, Burridge and Sinclair (2002) found bidirectional causality between each pair of real GDP, real exports and real FDI for China using seasonally adjusted quarterly data from 1981 to 1997. Kohpaiboon (2003) found that, in export promotion (EP) regime, there is unidirectional causality from FDI to GDP for Thailand using annual data from 1970 to 1999. Alici and Ucal (2003) found only unidirectional causality from exports to output for Turkey using seasonally unadjusted quarterly data from 1987.1 to 2002.4. The empirical literature is summarized by Lewer and Hendrick Van den Berg (2003), in which the results are remarkably consistent, not only in terms of a positive association between openness of economies and higher economic growth but also about the magnitude of the effect.

Adamopoulos (2004) found bidirectional causality between real GDP and real exports, unidirectional causality running from FDI to real exports, and FDI to real GDP for Greece, using annual International Monetary Fund (IMF) data from 1960 to 2002. In addition, Ahmad, Alam, and Butt (2004) found unidirectional causality from exports to GDP and FDI to GDP for Pakistan using annual data from 1972 to 2001. Cuadros, Orts, and Alguacil (2004) found unidirectional causality running from real FDI and real exports to real GDP in Mexico and Argentina, and unidirectional causality running from real GDP to real exports for Brazil using seasonally adjusted quarterly data for the three countries between the late 1970s to 2000. Chowdhury and Mavrotas (2006) found unidirectional causality running from GDP to FDI for Chile and bidirectional causality running between GDP and FDI for Malaysia and Thailand using data from 1969 to 2000.

Makki and Somwaru (2004) found a positive impact of exports and FDI on GDP using data from 66 developing countries averaged over the ten year periods of 1971-1980, 1981-1990 and 1991-2000 and an instrumental variable method. Wang, Liu, and Wei (2004) used panel data analysis on 79 countries from 1970-1998 and found that FDI was relatively more beneficial to high-income countries, while international trade was more important to low-income countries. However they did not address the stationarity of the variables to avoid spurious conclusions and did not apply the panel data causality analysis. Also, as Basu, Chakraborty, and Reagle (2003) had pointed out, the above two works only looked at one-way determinants of FDI through regression analyses, rather than at two-way causality linkages between GDP, exports, and FDI, and hence are not strictly comparable with the causality analysis.

Nair-Reichert and Weinhold (2000) found that the Holtz-Eakin causality tests show FDI, and not exports, causes GDP using data from 24 developing countries between 1971 and 1995 and applying mixed fixed and random (MFR) effects models. Hansen and Rand (2006), using data for 31 countries from 1970-2000 and the neoclassical growth model, found a strong bidirectional causality relationship between FDI ratio (FDI/GDP) and GDP. However, they did not take into account exports. Moreover, this paper covered too many countries with different stages of development, and thus, the results may affected by the problem of missing variables and endogeneity. Hsiao and Hsiao (2006) examined the Granger causality relationship between GDP, exports, and FDI among eight rapidly developing East and Southeast Asian economies (four NIEs and three ASEAN countries plus China) using panel data from 1986 to 2004. For the individual country time series causality tests, they did not find systematic causal relationships among the three variables.

However, the panel data causality tests results of Hsiao (2006) revealed that FDI has unidirectional effects on GDP directly and indirectly through exports, and there also exists bidirectional causality between exports and GDP for the ASEAN group of countries. He also found panel data analysis to be superior to time series analysis. Using this method Cho (2005) and Hsiao (2006) applied the panel data causality analysis and found only a strong unidirectional causality running from FDI to exports among the three variables, using annual data of nine economies.

Net FDI to the ASEAN-5 increased rapidly before AFTA implementation over the period 1970 to 1992. Data in the period show that among the ASEAN countries, the largest private FDI inflows went to Singapore USD 34747 million followed by Malaysia USD 24701 million followed by Thailand , Indonesia and the Philippines with respective of USD 12726 million , USD 12013 million and USD 5860 million (Table 2.3). The volume of FDI inflows in ASEAN in the 1980s was 4.3 times greater that of the 1970s. Among the individual countries, the growth has been the fastest in Thailand, followed by Singapore, Philippines, Malaysia, and Indonesia.

Table 2.3: Foreign Direct Investment Inflows before AFTA for ASEAN-5, 1970-1992 ($USD Million)

Year	1970-1974	1975-1979	1980-1984	1985-1989	1990-1992	1970-1992
Malaysia	1051	2211	5654	3994	11792	24701
Thailand	416	382	1434	3719	6775	12726
Indonesia	1461	2918	1052	2209	4373	12013
Philippines	215	586	934	2244	1882	5860
Singapore	1063	1950	6933	12135	12666	34747

Note: Measure US Dollars at current prices and current exchange rates in 2014

Source: Author computed based on United Nations Conference on Trade and development 2015.

The below Table 2.4 show the FDI trend after AFTA implemented for ASEAN-5 between year 1992 to 2014. The below data taken for every five years interval from 1992 until 2012 where else for year 2013 and 2014 is taken for 2 years.

Table 2.4: Foreign Direct Investment Inflows after AFTA for ASEAN-5, 1992-2014 ($USD Million)

Year	1993-1997	1998-2002	2003-2007	2008-2012	2013-2014	1993-2014
Malaysia	29757	14154	25818	39121	22915	131765
Thailand	11466	25437	40008	32819	26582	136312
Indonesia	19587	-9427	21478	66346	41396	139380
Philippines	7057	6976	8870	8690	9938	41531
Singapore	52313	63491	144189	195759	132316	588069

Note: Measure US Dollars at current prices and current exchange rates in 2014

Source: Author computed based on United Nations Conference on Trade and development 2015

Data in the period show that among the ASEAN countries, Singapore still maintain the largest private FDI inflows with USD 588069 million followed by Indonesia USD 139380 million where else Thailand , Malaysia and the Philippines with respective of USD 136312 million , USD 131765 million and USD 415131 million (Table 2.3).

Balasubramanyam and Salisu (1991), Jackson and Markowski (1995) and Chakrabarti (2001) used export volume as a measure of openness of an economy. They have found a positive relationship between exports and FDI inflows. Buckley et al. (2007) used a similar measure and found similar outcome. However, trade theory does not provide a distinct causal relationship between trade and output growth. The debate of the direction of causality is usually informed by inferences based on empirical analyses. Nevertheless there are extensive works that focus on the relationship between trade and growth with many espousing the advantages of outward-oriented trade policies rather than inward-oriented policies based on import substitution industrialization

2.4 AFTA and Export Growth

Based on Shepherd and Wilson (2004) finding that only considered trade among the ASEAN members, the current study extends the analysis to 69 key bilateral trading partners of ASEAN members. Based on the gravity model analysis, the results of the paper highlight that reductions in the tariff barriers tend have significant positive impact on the export performance of ASEAN countries. The endogenous growth theory that was pioneered by Romer (1986) and Lucas (1988) has provided persuasive evidence for the proposition that an increase in exports as a percentage of GDP will have a positive effect on economic growth. Export expansion and openness to foreign markets is viewed as the key determinants of economic growth because of the positive externalities it provides.

The ASEAN economies have experienced a remarkable increase in both amount and volume of intra-regional trade flows since the last three decades. The evidence proves that the ASEAN region has proliferated since the establishment of AFTA in 1992. Table 1 tracks the intra- and extra- exports and imports trends over a period of 10 years (from 1996 to 2006) within the ASEAN region. From Table 2.4, one can observe a rising trend in the value of merchandise trade from 1996 to 2006. The total value of exports to the region rose from US$341 billion in 1996 to US$770 billion in 2006, the rise in exports trade accelerated with total exports being 125% higher in 2006 than in 1996. Although there is a slight decline in trade variables during the Asian crisis, we do observe a general rising trend among the ASEAN countries yet the export increased due to lowering tariff rate.

Table 2.5: Merchandise Trade within ASEAN (US$ billion), 1996-2006.

Year	Total Exports	Intra-exports	Extra-exports
1996	341	87	254
1997	356	88	268
1998	331	73	259
1999	362	81	281
2000	432	104	328
2001	388	91	297
2002	407	95	312
2003	475	116	259
2004	569	145	423
2005	655	167	288
2006	770	193	577

Source: World Trade Organization (WTO), 2008.

Taking the above argument, it can be concluded that export expansion due to AFTA (trade liberalization) will cause economic growth in the ASEAN-5 via a foreign trade multiplier, the fostering of specialization, efficient resource allocation, greater capacity utilization, enlargement of market size, all of which lead to greater economies of scale and increased technological innovation stimulated by competition in foreign markets (Helpman and Kurgman,1985), and acceleration of the rate of capital formation through the exchange of imported goods and technical expertise. Meanwhile, Levine and Renelt (1992), Rodrik (2006) and Rasiah (2013) showed that the link between trade export and growth is better explained through the promotion of capital accumulation rather than promotion in efficient resource allocation.

Despite the popularity of the export-led growth (ELG) hypothesis, the empirical evidence is rather mixed. Jung and Marshall (1985) found no causality linkages between exports and growth in the Philippines, but found positive linkages between the two in Thailand and the opposite in Indonesia over the period 1953-81. This finding is later supported by Ahmad and Harnhirun (1996) using ASEAN countries over the period 1966 to 1988. Hutchinson and Singh (1987) observed that it is not possible to establish

one-way causality in 18 out of 34 countries they investigated. Esfahani (1991) tackled the simultaneity problem in a more direct way by formulating and estimating a three-equation model of growth, exports and imports. He found that when his economic growth equation was estimated using the two stage least squares method, the estimated coefficient is insignificant, casting some doubt on the importance of the export externalities argument. Dutt and Ghosh (1996) also came to a similar conclusion whereby only a few countries in their sample supported the export-led growth theory while most exhibit either growth-led exports, or bidirectional causality, or no causality over the period 1953-1991. Hence, as a consequence the causality direction between growth and exports is economy specific and any attempts at generalizations can be considered inappropriate and spurious.

Other works provide fairly robust support for the export-led growth hypothesis. For example Suardi and Mahadevan (2006) employed quarterly time series data on Hong Kong, South Korea, Taiwan and Japan to carry out individual country analysis of the economies because of the inappropriateness of drawing statistical inferences from cross-country and pooled panel data studies. The uncertainty in output and trade variables is captured by the conditional variance of the variables concerned using a generalized autoregressive conditional heteroscedastic (GARCH) model. They found that, in particular, when uncertainty is incorporated in the trivariate model, Korea's GDP growth is not significantly affected by imports or exports (and vice versa), while Japan's GDP growth is import but not export growth-led. For studies of group countries, Makki and Somwaru (2004) found a positive impact by exports and FDI on GDP using 66 developing countries data averaged over ten-year periods, 1971-1980, 1981-1990, and 1991-2000.

One way fixed effects models also show that GDP and exports have a significant relationship in the five ASEAN countries i.e. Malaysia, Indonesia, Philippines, Singapore and Thailand based on Fumitaka (2007) findings. The positive sign on the export variable indicates that an increase in exports leads to an improvement in economic growth in the long run, and hence, supports the export led-growth hypothesis. Liwan, Audrey and Lau, (2007) and Hsiao and Hsiao (2006) employed time series analysis for individual economies to investigate causality relations between FDI and exports, and GDP among the rapidly growing economies of Asia over the period 1986 to 2004. Bidirectional causality flows from exports to GDP were found in Malaysia and Thailand even though the Asian Financial crisis had a strong negative impact on both countries.

Several studies have also shown that it is possible to have growth-led export (GLE); which has a reverse causal flow from economic growth to export growth. In the growth-led exports case, export expansion could be stimulated by specialization of growth and economies of scale leading to cost reduction and comparative advantage as growth stimulates export increase. In most of the East Asia's leading economies, technological specialization has driven trade specialization, which generates spillover into productivity growth (Uchida and Cook, 2005). Exports also create the opportunity for more productivity gains, and hence, more exports in the long run (Thangavelu and Rajaguru, 2004; Liao and Liu, 2007).

Trefler (1995) discovered that the productivity of a country's factors of production tend to increase with its per-capita income in open economies. Trade liberalizations one of the pillars of modern prosperity. It has been known for a long time that reducing barriers to trade can lead to substantial gains in economic growth, a result that seems quite

robust. For example, a comprehensive study by the World Bank of nineteen countries that undertook major liberalization found substantial beneficial change from trade liberalization (Papageorgiou, Choski and Michaely, 1990). Yet, the empirical measurement of the long run resource allocation effects from trade liberalization often show small gains of less than 1 percent of GDP. For example, Hertel (1999), using the computable general equilibrium (CGE) model called the GTAP model, Hertel (1999) showed that a 40 percent across-the-board tariff cut for all sectors would lead to a 0.24 percent increase in world GDP.

In contrast, econometric studies suggest that trade liberalization has a much larger impact on economic growth than previously estimated. Frankel and Romer (1999) found that 1 percentage point increase in the trade to GDP ratio raises per capita income by 2 or 3 percent, though it varied by countries. Other studies also show that Asian economies that adopted outward-orientated policies during the period 1965 to 1990 increased GDP growths by 2 percentage points a year faster than those that adopted inward-looking policies Hill and Menon (2014). Part of the reason for the discrepancy between the econometric and CGE modeling results is that many of the latter estimates of trade reform over the 1990s simply captured the static effects of long run resource reallocation and any consequent terms of trade effects (see, for example, Martin and Winters, 1996). There are also dynamic gains that flow from greater capital accumulation. In an inter-temporal sense, the better use of resources lifts the return on capital and stimulates investment. This extra investment leads to dynamic capital accumulation, which is an additional gain from liberalization over that of more standard measures. McKibbin (1999) gives a good account of these dynamic gains, as well as, other dynamic effects stemming from trade Liberalization.

Another source of gain is the endogenous productivity effect measured by Frankel and Romer (1999), and Chand (1999), which occurs when trade is expanded. Competitive pressure on protected industries and new foreign investment opportunities that leads to new technical know-how can stimulate productivity improvements and higher growth. As Frankel and Romer (1999, p. 394) had noted, "trade appears to raise income by spurring the accumulation of physical and human capital and by increasing output for given levels of capital". In this study, we attempt to capture the contribution to human development, infrastructural and trade liberalization gain. This might be viewed as counter-intuitive at first, as population growth is often hypothesized to have a negative impact on per capita growth (see, for example, Kelley, 1988; Kien, Nguyen Trung and Yoshizo Hashimoto, 2005).

Table 2.6: Average CEPT Rates, By Country, 1993-2003.

Country	93	94	95	96	97	98	99	00	01	02	03
Indonesia	17	17.3	15.2	10.4	8.5	7.1	5.4	4.8	4.3	3.7	2.2
Malaysia	11	10	9.2	4.6	4.1	3.5	3.2	3.3	2.7	2.6	2
Philippins	13	11.4	10.5	9.6	9.2	7.2	7.3	5.2	4.5	4.1	3.8
Singapore	0	0	0.01	0.01	0	0	0	0	0	0	0
Thailand	20	19.8	18.2	14.2	13	10.2	9.6	6.1	5.7	5	4.6
ASEAN-5	60	58.5	53.1	38.7	35	27.9	25.5	19	17.1	15.4	12.6

Source: ASEAN Secretariat, 2005.

After AFTA was established, total trade among ASEAN countries grew from US$ 44.2 billion in 1993 to US$ 95.2 billion in 2000, showing an annual increase of 11.6 percent. The intra-ASEAN exports made up about 23.3 percent of total ASEAN exports to the world. Before the financial and economic crisis struck in mid-1997, intra-ASEAN exports had been increasing by 29.6 percent. This is significantly higher than the rate of increase of total ASEAN exports to the world, which grew at 18.8 percent during the same period. The bilateral trade between member countries shows that there's an

increase in the export both in the absolute number and as a share of total trade to the world. Indonesia and The Philippines experienced an increased pattern on trade to the other member countries. Prior to the establishment of AFTA, Indonesia's exports to the ASEAN countries amounted to only 10 percent of its total exports while The Philippines exports to ASEAN amounted to just 7 percent of its total exports. After AFTA was established, Indonesia increased its export to ASEAN-5 countries to 20 percent while the Philippines increased its exports to 13 percent, in dollar value almost three times higher compared to the pre-AFTA period.

Table 2.7: Export of ASEAN countries for selective years, 1985-2013.

Exports of ASEAN members to ASEAN countries, 1985-2013 (USD$M)					
Country	1985	1995	2005	2010	2013
Indonesia	844	5 469	12 927	16 766	22 343
Malaysia	1 934	11 602	19 576	31 801	39 930
Philippines	2 235	N/A	4 525	17 607	21 685
Singapore	4 688	27 329	55 702	94 489	122 447
Thailand	2 041	14 845	19 892	34 326	58 975

Note: Measure US Dollars at current prices and current exchange rates in 2014

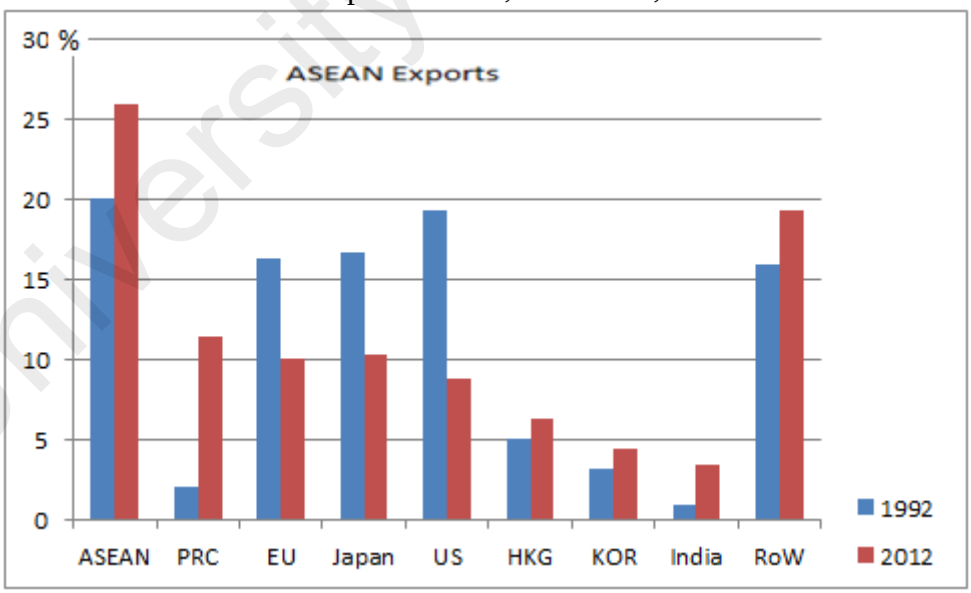
Source : Author computed based on United Nations Conference on Trade and development 2015

Table 2.7, indicates export growth of ASEAN 5 over the period 1985-2013. As we can see, the export growth of the ASEAN-5 for period 1985 to 2013 has increase from USD 844 million to USD 22343 million for Indonesia with each country experiencing growth tremendously in which most of the countries have almost fully removed their tariffs.

Kien and Hazimoto (2005) found that even if there is an increase in bilateral trade between member countries, AFTA has not given rise to export trade diversion. One plausible explanation for this is that export-oriented strategies have been an engine of economic growth in these countries for a long time. Moreover, the characteristics of production and consumption in all member countries may have led them to persistently

aim for non-members as their export destinations. Using the gravity equation, Elliot and Ikemoto (2004) estimated whether the Asian economic crisis was a help or hindrance to ASEAN intra-regional trade. One of the findings was that trade flows were not significantly affected in the years immediately following the signing of AFTA agreement in 1993. The index formula has been broadly used in explaining the determinants of a country's trade flows and provides an accepted framework and a useful multivariate approach for assessing the impact of regional trade. It is a model of trade flows based on the analogy of the law of gravity in physics. Trade between two countries is positively related to their size, and inversely related to the distance between them. More than one index approach has been used in order to make comparative and empirical studies of international trade. A number of explanatory variables were added in the index equation to improve the explanatory power of the model when analyzing various bilateral trade policy issues.

Table 2.8: Export Growth, ASEAN-5, 1990-2012



Note: ASEAN = Association of Southeast Asian Nations; EU = European Union; HKG = Hong Kong, China; KOR = Republic of Korea; PRC = People's Republic of China; RoW = Rest of the World; US = United States.

Source: International Monetary Fund, Direction of Trade Statistics. (accessed October 2013).

In addition, numerous empirical studies have investigated the role of imports in economic growth in different regions spanning from Latin America to Asian countries, but few of them have focused on the Southeast Asian countries. Imports in particular have had a marked effect on economic growth and productivity in Indonesia, Malaysia and Thailand, which has contributed substantially to the productivity and economic growth of these three countries by raising the marginal returns from imports. For example, the production elasticity of imports was 0.226 in Indonesia, 0.443 in Malaysia, and 0.428 in Thailand (Marwah and Tavakoli, 2004). It is not surprising then that import growth (since most of which are inputs) has had a positive impact on GDP growth (adjusted and not adjusted for trade). Mahadevan (2007) also highlighted the importance of imports as a source of GDP growth. The two-way relationship between growth in imports and exports will also strengthen the feedback links that may have existed. Winter (2004) added that evidence and experience seem to suggest that openness enhances economic growth, although it is difficult to establish the hypothesis beyond doubt.

2.5 AFTA and Import Growth

With the formation of AFTA, analyses on regional trading blocs in the ASEAN region have increased. For example, Elliott and Ikemoto (2004), Martinez-Zarzoso (2003), Thorton and Goglio (2002), Sharma and Chua (2000), Hassan (2001) and Nilson (2000) used the gravity model to investigate intra-regional trade flows. Sharma and Chua (2000) found that the ASEAN integration scheme did not increase intra-ASEAN trade, but an increase in trade occurred with other APEC trade groups. Elliott and Ikemoto (2004) and Clarete (2003) studied not only intra-ASEAN trade but also the effect of AFTA on extra-regional trade. Elliott and Ikemoto (2004) found that intra-ASEAN trade flows were not significantly affected in the years immediately following the

signing of AFTA agreement. Also, the agreement has not been significantly detrimental to the welfare of the rest of the world. Clarete (2003) found that AFTA, as one of the major preferential trade agreements (PTA), has reduced trade flows between the ASEAN and other trade blocs. Most of the above studies were based on the 1990s data and were focused on either intra-regional trade or trade between different integrated regions. In addition, these works considered the effect of AFTA on trade flows upon the signing of the free-trade agreements. However, research analyzing the effects of AFTA on ASEAN trade flows has remained scarce.

Table 2.9 presents the average annual growth in imports of the ASEAN members over the periods 1970-92 and 1992-2013. Thailand enjoyed the highest average annual growth in imports among the pioneering ASEAN-5 recording 15.3 percent in 1970-92 and 28.4 percent in 1992-2013. The sharp jump following the introduction of AFTA was a consequence of massive imports of automotive components and completely knocked down parts for assembly in Thailand. Indeed, Thailand took advantage of the 40 percent rule of origin condition for importers to enjoy the preferential tariffs offered by the CEPT to assembly cars for export into the ASEAN countries (Rasiah, 2009).

Singapore (14.5 percent) enjoyed the next highest import growth over the period 1970-92. Indonesia and Singapore together recorded the second highest import growth in the period 1992-2013. Nevertheless, being among the most open economies in the world all the ASEAN-5 economies experienced rapid growth in imports in both periods.

Table 2.9: Average Annual Import Growth, ASEAN-5, 1970-2013

ASEAN-5	1970-1992	1992-2013
Indonesia	13.8	8.9
Malaysia	14.4	7.8
Philippines	12.1	7.5
Singapore	14.5	8.9
Thailand	15.3	28.4

Source: Author Computed from World Bank Data (2014)

While governments fear that the deregulation of tariffs will exacerbate balance of payments deficits, from the learning vantage point imports can also be viewed as critical components to plug missing inputs in production and for learning (Amsden,1991) Rapid import growth has obviously offered the ASEAN-5 as important laboratories to test the tariff liberalization thesis

2.6 Theoretical Framework

Having reviewed past work on the impact of tariff reduction on GDP, FDI inflows, exports and imports, we now present the theoretical framework of this study in Figure 2.1. A sharper fall in tariffs after 1992, the year when AFTA was launched, is expected to offer economies of scale and scope and competition to attract FDI inflows, and stimulate further exports and imports. These processes are then expected to stimulate GDP growth directly and indirectly through technological spillovers and demonstration effect (Caves, 1974; Rasiah, 1995). However, these spillover effects could only occur if domestic firms have the ability to absorb it. As is shown by Kim (2004), there is a certain threshold level of development required in the host country to absorb the technologies and knowledge embodied in FDI. This is supported by Chuang and Hsu's (2004) argument that technology spillover effects of FDI is positively correlated with the capability and development of domestic firms. In the case of tariff jumping strategy, the formation of a free trade area reduces transaction costs and discourages firms to

produce in multiple countries. Also, exporting to firms located in free trade areas is cheaper than investing abroad suggesting that trade will substitute for FDI. However, empirical evidence also shows that FDI and trade are complementary by Graham, (1996)

While greater competition can also crowd out FDI and domestic production, it can also creatively replace old technology with new one so that the renewed firms become more competitive. Also, these processes act in a circular way so that GDP growth will spearhead growth in FDI inflows, exports and imports. Whether the AFTA process will crowd in or crowd out domestic production will depend on firms' responses to the changing institutions in the ASEAN-5. The econometric regressions using the vector error correction (VEC) model will help establish the causal links if they exist. The Figure shows the relationship between tariff reduction and GDP growth for ASEAN-5 before and after tariff lowering impact to economy growth.

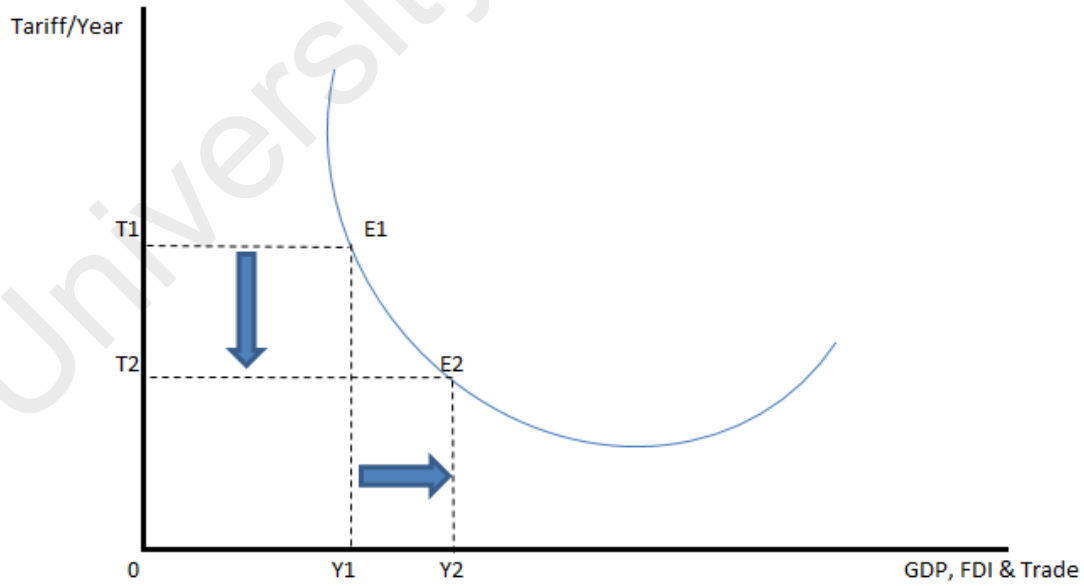


Figure 1.11 Impact of Tariff Reduction on GDP, FDI Inflows and Trade, ASEAN-5
Source : Plotted by Author (2015)

Based on Figure 1.11 E1 represents the equilibrium before AFTA was implemented where with tariff rate at T1 level gives output of Y1 GDP growth. After AFTA policy was implemented, ASEAN-5 experiences lowering of tariffs gradually from T1 to T2. The reduction of the tariff rate causes an increase in export, FDI inflows and exports, which raises aggregate level GDP from Y1 to Y2.

The lowering of tariffs have also been a consequence of a rise in indirect pull factors, such as increases in FDI arising from trade liberalization and increases in import and export, which constitute important contributors to economic growth. The AFTA agreement was made in 1992, therefore the year of 1992 is the watershed year that triggered further liberalization of tariff rates though the full transition of the AFTA agreement was not achieved until after 1993. Based on this analytic framework, four hypotheses were derived for testing in this thesis. The period chosen are 1970-1992 (period 1) and 1992 to 2013(period 2), and the overall long period 1970-2013 (period 2).

2.7 Imperfect Competition and Scale Economies

It is well know that scale of economies create potential gains from trade and provide an alternative to differences in technology or factor endowments, as an explanation of international trade. Scale economies also matter empirically. AFTA has create the large volume of intra-industry trade and only be understood within the context of product differentiation and economies of scale. Perfect competition is, in general incompatible with economies of scale, so some form of imperfect competition will prevail. For example, most formal treatments of trade under increasing returns assume that scale economies are external to the firm, so that markets remain perfectly competitive (Melvin 1969: kemp 1969; Henderson 1972). An exception is Krugman (1979) who assumed that scale economics are internal to the firms with the market structure that

emerges being one of Chambelinian monopolistic competition. Krugman concludes that trade may be simply a way of extending the market and allowing exploitation of scale economies with the effect of trade

2.8 Summary

The literature review in this chapter highlighted the relationship between trade and FDI, and GDP growth. While there is no consensus on how these economic variables are related during the period following outward-orientation, it is clear that the economic policy and the developmental status of the ASEAN-5 countries has had an important role in stimulating economic development. The review also shows that no study has analyzed effectively the impact of AFTA's formation on the ASEAN-5 over the period from 1970 to 2013. Additionally, there is a related branch of literature that has looked for evidence regarding the relationship between total factor productivity, economic growth and trade openness. These studies assume that economic growth arises from increased trade openness (ratio of total trade to GDP) before and after AFTA implementation.

Past findings on the impact of tariff reduction on GDP, FDI, export and import growth is not wholly positive. Nevertheless, since the broad arguments denote that tariff reduction especially from colossal levels will be beneficial to economies if the governments ensure that the requisite regulatory framework is enacted to ensure the development of technological capabilities, we follow the mainstream argument here in the thesis.

CHAPTER 3: METHODOLOGY

3.1 Introduction.

The liberalization of trade has led to a massive expansion in the growth of world trade relative to world output. While world output (or GDP) has expanded fivefold, the volume of world trade has grown 16 times at an average compound rate of just over 7 percent per annum. In some countries, notably in South-East Asia, the growth of exports has exceeded ten percent per annum. Exports have tended to grow fastest in countries with more liberal trade regimes, and these countries have experienced the fastest growth of GDP.

We introduce the methodology that will be used in the thesis. The economic matrix impact analysis is used in the regression model on all the ASEAN-5. Such a model describes the interrelationships between growth within the economy and the relationships of these sectors to economic activities outside the economy. The four hypotheses examined in the thesis are not only defined here, they also form the basis for the selection of the quantitative models to analyze the impact of the AFTA process on the ASEAN-5.

3.2 Hypotheses

We frame the four hypotheses of the thesis in this section. Indeed, the economic arguments behind the efforts to proceed with AFTA are captured in these hypotheses.

3.2.1 Hypothesis 1: AFTA stimulates economic growth

There is a possibility that in an open economy, the reduction of tariff rates, through the CEPT and MFN instruments will spur economic growth. The endogenous growth model assumes that the diffusion of technology and knowledge into the domestic economy occurs through the imports of intermediate goods, such as, machinery and equipment. Employees undergo learning from technology when they are required to unbundle the embodied technology, which would deepen the human capital among local workers who may later be hired by domestic producers to increase productivity. The import of high-tech equipment and machinery could stimulate technological upgrading in national firms. Also, competition would force domestic producers to be more innovative and achieve greater efficiency to compete with foreign investors. Technology diffusion would happen when domestic firms are able to absorb it.

Hence, the tariff-led growth hypothesis to be tested is $H_{1:}$ Lower tariffs could lead to economic growth. This hypothesis will provide new empirical evidence concerning the AFTA-led growth hypothesis H_o: Null hypothesis, reduction in tariff led to GDP growth for ASEAN 5. H_1: Alternative hypothesis, reduction in tariff does not lead to GDP growth in the ASEAN 5. This hypothesis will be tested by dividing the periods into P1, P2, and the whole integrated period of P3. The CEPT tariff rates will be used for the period P2 and the MFN tariff rates will be used over the period P1, which is the tariff regime in operation over those periods respectively.

Table 3.1: Hypothesis 1: Expected relationships

Variable	Period	Tariffs
GDP	P1	-ve
GDP	P2	-ve
GDP	P3	-ve

Source: Author (2015)

Hypothesis 1 will determine the relationship between GDP and tariff subject to MFN and CEPT. The relationship between GDP growth and tariff liberalization will be analyzed using the following test:

H_o = GDP growth has relationship with tariffs (MFN/CEPT)

H_1 = GDP growth has no relationship with tariffs (MFN/CEPT)

A positive correlation coefficient means that as tariffs fall the value of GDP will increase. The null hypothesis will be tested for the period P1 with MFN tariff values, for the period P2 with MFN, CEPT, CEPT +MFN tariff values and for P1&P2 with MFN tariff values.

3.2.2 Hypothesis 2: AFTA stimulates FDI inflows

The second hypothesis examines the existence of causality between FDI and economic growth in before and after AFTA implementation periods. FDI could stimulate economic performance by injecting capital into the host country, and eventually creating knowledge and technology spillovers.

This framework consists of one single structural growth equation. Based on the null hypothesis, economic growth is presumed to be a function of the growth of FDI provided it is simultaneously accompanied by tariff reductions. The core variables used

in the specification of this equation are predominantly the main conventional variables used in many cross-sectional regression models. We use time series methodology to analyze the data from 1970 to 1991 (P1) and 1992 to 2013 (P2).The FDI-led growth hypothesis to be tested is H_2: FDI leads to growth in the ASEAN-5 economy because of the short series we use stationarity tests to validate the model used. Economic growth would also raise demand for the both domestic and foreign investment rises, and hence, causation can be bi-directional (Zhang, 2001). Therefore, the greater the economic growth, the higher the FDI is in the recipient country, vice versa. Therefore, the hypothesis to be tested for growth-led FDI is H_2: The growth of the economy attracts an inflow of FDI or the latter leads to the former.

Table 3.2: Hypothesis 2, Expected relationships

Variable	Period	Tariffs
FDI	P1	-ve
FDI	P2	-ve
FDI	P3	-ve

Source: Author (2015)

The hypothesis to be tested:-

H_o = FDI growth has relationship with tariffs

H_1 = FDI growth has no relationship with tariffs.

The null hypothesis will be tested for period P1 with tariff value MFN, P2 with tariff value MFN, CEPT, CEPT +MFN and for P3 will be tested with MFN tariff value. In line with the main argument, we the relationship between FDI inflows and GDP growth should be stronger in period P2 compared to P1 for AFTA to have brought positive FDI synergies in the ASEAN-5.

3.2.3 Hypothesis 3: AFTA Stimulates Export growth

The importance of export in generating economic growth cannot be understated (Frankel and Romer 1999). Indeed, Smith (1776) had established the dictum that the division of labour is determined by the size of the market, which constitutes the basis for the celebrated export led growth hypothesis. Overall economic growth of a country can be promoted not only by increasing the amount of labor and capital, but also by intensifying export. Hence, the third hypothesis of this study is to determine export expansion due to tariff reduction under the AFTA trade regime. Therefore the hypotheses to be tested here is: H_3: increasing exports could increase a country's GDP exports. Based on the theory of the international division of labor, exports allow the host country to concentrate investment on those sectors where it enjoys a comparative advantage internationally. While exposure to exports raises competition essential to stimulate 'creative destruction', it will also stimulate specialization, which is likely to enhance efficiency in the allocation of productive resources and through the application of economies of scale stated by Smith (1776).

This argument is supported by Chuang and Hsu (2004) who stated that exposure to the international market helps domestic firms gain access to and learn new technology, especially through trading with more advanced countries. They can learn skills like management, production, and marketing from their trading partners. Grossman and Helpmann (1991) and Barro and Sala-iMartin (2004) have argued that a more open trade regime leads to a greater ability to absorb technological progress and export goods that stimulates economic growth. Grossman and Helpman (1991) and Rodrik (1992) have pointed out that exports can potentially create growth-accelerating forces. So the export-led growth hypothesis to be tested here is H_3: Increased exports lead to economic growth.

An external sector development index (SXi) was constructed to explain the impact of exports on GDP in the periods P1 and P2. SXi refers to growth rate in export volume and is estimated as follows:

$$SX - development = \frac{\Delta TV + \Delta I \; x \; 100\ \%}{\Delta Y}$$

The scope of econometric analysis for hypotheses 3, tabulated in Table 3.3 as shown below.

Table 3.3: Hypothesis 3, Expected relationship

Variable	Period	Tariffs
Export	P1	-ve
Export	P2	-ve
Export	P3	-ve

Source: Author 2015

The hypothesis to be tested:-

H_o = Exports (Exp) have direct relationship with tariffs (Evidence found)

H_1 = Exports (Exp) have no relationship with tariffs (Evidence not found)

The econometric equation to test the impact of exports is based on the equation below:

Equation 3.1:-

$$GDP_{p1} = \beta_0 \; + \; \beta_1 \, In \, EXP_t \; + \; \beta_{2=} \, InFDIt + \; \beta_{3=} \, InIMPt \; + \; \beta_{4=} \, InMFNCEPTTRF_t \; + \; \mu_t$$

$$Exp_{p1} = \beta_0 \; + \; \beta_1 \, In \, GDP_t \; + \; \beta_{3=} \, InFDIt + \; \beta_{4=} \, InIMPt \; + \; \beta_{2=} \, InMFNCEPTTRF_t \; + \; \mu_t$$

$$Exp_{p2} = \beta_0 \; + \; \beta_1 \, In \, GDP_t \; + \; \beta_{2=} \, InMFNCEPTTRF_t \; + \; \mu_t$$

The null hypothesis will be tested for period P1 with tariff value MFN, P2 with tariff value MFN, CEPT, CEPT +MFN and for P1&P2 with MFN tariff value.

3.2.4 Hypothesis 4: AFTA Stimulates Import growth

The fourth hypothesis of this study is drawn from Mahadevan (2007), which is, H_4: AFTA increases the country's imports, which will have a positive bearing on economic growth. Imports can help attract raw material for processing and scarce capital goods to support product (Imports can also be a major channel for the transfer of knowledge embodied in machinery and equipment. Hence, so long as countries do not face chronic trade imbalances imports can provide the impetus for the galvanization of domestic productive capacities (Helpman and Krugman, 1988).

Table 3.4: Hypothesis 4, Expected relationship

Variable	Period	Tariffs
Import	P1	-ve
Import	P2	-ve
Import	P3	-ve

Source: Author 2015

The hypothesis to be tested:-

H_o = Import (Imp) growth has relationship with tariffs (MFN/CEPT)

H_1 = Import (Imp) growth has no relationship with tariffs (MFN/CEPT)

The null hypothesis will be tested for period P1 with tariff value MFN, P2 with tariff value MFN, CEPT, CEPT +MFN and for P1&P2 with MFN tariff value.

We have deliberately avoided the introduction of all possible variables of influence because this thesis does not seek to explore exhaustively the determinants of GDP, FDI inflows, exports and imports. Instead it seeks to examine if causation exists between tariff deregulation and these variables, and if so, the direction of causation. In so doing we seek to only analyze the sign of causation if the Granger causality results are significant. This assumption is fine as the Vector Error Correction model allows separate independent relationships between the independent variables and the dependent variable without colinearity issues.

3.3 Granger Causality

The granger causality test methodology is adopted to estimate the casual links between export, GDP economic growth, import, FDI and tariff of ASEAN -5 in this study using the following functional form:

$$GDP_{it} = f(FDI_{it}\ EXP_{it}\ IMP_{it}\ TRF_{it}) \quad \text{(E.q.1)}$$

$$FDI_{it} = f(GDP_{it}\ EXP_{it}\ IMP_{it}\ TRF_{it}) \quad \text{(E.q.2)}$$

$$EXP_{it} = f(GDP_{it}\ FDI_{it}\ IMP_{it}\ TRF_{it}) \quad \text{(E.q.3)}$$

$$IMP_{it} = f(GDP_{it}\ FDI_{it}\ EXP_{it}\ TRF_{it}) \quad \text{(E.q.4)}$$

Whereby,

GDP is the real GDP growth, EXP is the real exports. IMP is the real import and TRF is the tariff rate on imports. However, for the empirical examination, we transformed all the variables into log-linear form for easy and efficient analysis of the results. Economic growth is measured by the real GDP, while FDI is measured by inflows. Exports and imports are measured by international outflow and inflow of goods and services. All the data are in USD and the year 1992 is used as the partitioning year. Tariffs were

measured based on MFN and CEPT rates. Tariff rate mean was used from tariff lines were aggregated at the 6- digit level by taking the average of the tariff rates.

This study uses annual data covering the period of 1970 to 2013, which was obtained from the United Nations Conference on Trade and Development (UNCTAD) Handbook of Statistics 2014 and journal of economic Philippines. All data are in logarithmic form in order to include the proliferative effect of time series and it is differentiated by the periods P1 to P2.

The methodology of this study involves constructing an econometric model to investigate the relationship between GDP, FDI, exports and imports. If the variables mentioned in the model share a common stochastic distribution and their second differences are stationary then they can be co-integrated (Dritsaki and Adamopoulos 2004). The first step is to check for the order of integration through the unit root tests. If unit roots are present then stationary is achieved by the first differencing of the data. The use of second differences in econometric studies facilitates the interpretation of the results, since the first differences of logarithms of initial variables represent the rate of change of these variables (Dritsaki 2003). The next step is to test by applying the Granger Causality to determine unidirectional and bidirectional causality between these variables for the respective country**.**

For economic growth we use proxies used in past studies. For example, King and Levine (1993) apply four indicators for economic growth: “real per capita GDP, the rate of physical capital accumulation, the ratio of domestic investment to GDP, a residual measure of improvements in the efficiency of physical capital allocation”. Demetriades and Hussein (1996) use real GDP per capita as an indicator of economic development using the domestic currency. The analyses of Kar, Mushin and Pentecost (2000) and Unalmis (2002) were based on Gross National Product (GNP) at current prices as the

proxy for economic growth. In this research we use real GDP per capita in U.S. dollars. We preferred the US dollar over the national currencies so that there will be a common indicator for the five currencies using the most trade currency in the world The rationale for studying the two periods from 1970 to 1992 and 1992 to 2014 is that ASEAN countries introduced the AFTA process in 1992 to accelerate liberalization and integration.

The four hypotheses of this study are examined in the next four chapters. Chapter 4 analyzes the results and findings of GDP growth due to tariff reduction. Chapter 5 evaluates the results and findings on the impact of AFTA on FDI inflows. Chapters 6 and 7 investigate the impact of the AFTA process on exports and imports respectively.

3.4 Econometric Analysis

The tariff led growth hypothesis will be performed in three steps: (1) Unit root test; (2) Durbin Watson test (3) test for direction of causality. We conduct these three tests at the individual as well as panel level. Where, GDP, FDI, export and import (Trade) represents economic growth. The detail descriptions of these three tests are mentioned below.

3.4.1 Modeling Effects of GDP, FDI, Export and Import

Weighted mean applied tariff is the average of effectively applied rates weighted by the product import shares corresponding to each partner country. Data are classified using the Harmonized System of trade at the six- or eight-digit level. Tariff line data were matched to Standard International Trade Classification (SITC) revision 3 codes. In order to empirically test for the presence of causal relationships between AFTA and economic growth it is common to apply Granger causality test (Granger, 1969, Sims 1972), which

provides a "useful way of describing the relationship between two (or more) variables when one is causing the other(s)". Moreover, the co-integration technique (Engle and Granger (1987)) provides us with more informative results about the causal relations. Engle and Granger (1987) argue that if two (or more) variables are found to be co-integrated, there is a corresponding error-correction representation. The basic concept of the empirical investigation is to estimate a simple bivariate model (pair-wise combination between economic growth (Y) and the four proxies of economic growth. The first step in this study is to test the variables for unit root. For this purpose the Augmented Dickey Fuller test will be used. The testing procedure for this test is applied to the following regression:

Equation 3.2:-

$$(\Delta Yt = \beta 1 + \beta 2t + \delta Yt\text{-}1 + \alpha 1 \Delta Y\,(t\text{-}1) + \cdots + \alpha p\text{ -}1 \Delta Yt\text{-}p + 1 + \varepsilon t)$$

where β1 is a constant, β2 the coefficient on a time trend, p the lag of order of the autoregressive process, εt – is a pure white noise error term.

The Augmented Dickey Fuller is estimated in three different forms:

1) β1 and β2 equal 0 corresponds to modeling a random walk ($\Delta Yt = \delta Yt - 1 + \in t$)

2) β2=0 corresponds to modeling a random walk with a drift ($\Delta Yt = \beta 1 + \delta Yt - 1 + \in t$)

3) ($\Delta Yt = \beta 1 + \beta 2t + \delta Y_{t-1} + \alpha 1 \Delta Y_{t-1} + \in t - Yt$) is a random walk with drift around a stochastic trend. 12

The null hypothesis is that δ=0, so there is a unit root and the time series is non-stationary. The alternative hypothesis is that δ less than zero, so the time series dataset is stationary. If the test statistic is less that the critical value, then the null hypothesis can be rejected. It means that there is no unit root and the time series is stationary. If all the variables turn out to be integrated of the same order, it is necessary to check for co-integrating relationship between these variables. For this purpose we will apply

Johansen co integration test. If two time-series are non-stationary, but their linear combination is stationary, it is called as the co integrating equation and can be interpreted as a long run equilibrium relationship among two chosen time series. The purpose of Johansen co integration test is to determine whether a group of non-stationary series is co integrated or not. This methodology is based on the VAR model of order p:

$$Yt = A1yt - 1 + \cdots + ApYt - p + Bxt + \in t$$

Where yt is a k-vector of non-stationary I (1) variables, xt is a d-vector of deterministic variables, and ε is a vector of innovations. Johansen offers two different likelihood ratio test of the significance: the trace test and maxi-mum test. The null hypothesis for the trace statistics is to test that there are r<q co integration vectors. The alternative hypothesis is that there is r=q co integration vectors. The maximum value test if there are r vectors against another hypothesis that there is r=q co integration vectors.

If the non-stationary variables have no co integrating relationship, we will work with vector autoregressive model (VAR). For applying VAR model the first difference should be taken for making the variables stationary. To estimate this model it is necessary to identify the order, which implies the optimal lag length of variables. The order of VAR for each pair is selected by using the relevant information criterion (Akaike information criterion or Schwarz criteria-on). The estimated VAR model in our analysis is:

$Yt = \propto 1 + \beta FDI_{t-1} + \beta FDI_{t-2} + \ldots + \beta FDI_{t-p} + \beta Y_{t-1} + \beta Y_{t-2} + \beta Y_{t-p} +$ et1

$FDI_t = \propto 2 + \beta GDP_{t-1} + \beta GDP_{t-2} + \cdots + GDP_{t-p} + \beta Y_{t-1} + \beta Y_{t-2} + \beta Y_{t-p}$ + et2

Where p is the order of the VAR, α is the constant term, e is an error term, FDI denotes proxy of foreign direct investment and Y denotes economic growth. The model above explains pair-wise relationship of economic growth and the four proxies of economic growth. In the present case it should be mentioned that maximum four VAR models can be estimated for each country. If there is a co integration relationship between non-stationary variables, we will deal with vector error correction model (VECM). The VECM in this paper is:

Equation 3.3:-

$$Y_t = \pi 1 + \mu \Delta FDI_{t-1} + \mu FDI_{t-2} + \cdots + \mu 1p \Delta FDI_{t-(p-1)} + \mu \Delta Y_{t-1} + \mu 12.2 \Delta Y_{t-2} + \mu 1p \Delta FDI_{t-(p-1)} \delta 1 EC_{t-1} + \text{yt1}$$

$$FDI_t = \pi 2 + \mu \Delta FDI_{t-1} + \mu FDI_{t-2} + \cdots + \mu 2p \Delta FDI_{t-(p-1)} + \mu \Delta Y_{t-1} + \mu \Delta Y_{t-2} + \mu 2p - \Delta Y_{t-(p-1)} \delta 1 EC_{t-1} + \text{yt2}$$

Where EC is the error correction term, p is the order of the VAR, π is the constant term, γ is an error term, FD denotes proxy of financial development and Y denotes economic growth. As a final step, the models will be tested for non-causality. First, we test for the non-causality between the non-stationary and non-co integrated variables. By working with the first difference we test for the joint significance of the coefficients of the lagged variables using a Likelihood Ratio test. Next we will test for the non-causality between non-stationary and co integrated variables. Firstly t-test will be used for determining the significance of the error correction term, secondly, we test for joint significance of the lagged variables and finally joint significance of the lagged variables and the error correction term is examined. In this study unidirectional Granger causality suggests that financial development Granger causes economic growth. On the contrary,

reverse Granger causality means that indicator of economic growth influences financial development. And finally, when financial development and economic growth cause each other we can assume that there is bidirectional Granger causality. The calculations are made in excel, and all tests are applied in E-views 7.

3.4.2 Granger Causality test

Granger causality results indicate the Granger causal relations between two combinations of variables in the case of ASEAN-5 countries. It can analysis the two available impacts on economic growth. The most common way to test the causal relationship between two variable is the Granger – Causality proposed by Granger (1969). The test involves estimating the following simple vector auto-regressions (VAR):

Equation 3.4:-

$$X_t = \sum_{i=1}^{n} \propto_i Y_{t-i} + \sum_{j=1}^{n} \beta j\, X_{t=j} + \mu_{1t} \qquad (Eq.1)$$

$$Y_t = \sum_{i=1}^{m} \lambda_i Y_{t-i} + \sum_{j=1}^{m} \delta j\, X_{t=j} + \mu_{2t} \qquad (Eq.2)$$

Where it is assumed that the disturbances μ_{1t} and μ_{2t} are uncorrelated. Equation (1) represents that variable tariff is decided by lagged variable e.g. GDP and Tariff , so does equation (2) except that its dependent variable is GDP instead of tariff. Granger – Causality means the lagged GDP influence tariff significantly in equation 1 and the lagged tariff influence GDP significantly in equation 2. In other words, researchers can jointly test if the estimated lagged coefficient ∑αi and ∑**λ**j are different from zero with F-statistic. When the jointly test reject the two null hypotheses that ∑αi and ∑**λ**j both are no different from zero, causal relationship between GDP and tariff are confirmed. The Granger-Causality test is easy to carry out and be able to apply in many kinds of

empirical studies, such as export led growth (Xu, 1996) and money theory (Friedman and Kuttner, 1992). However, traditional Granger-Causality has its limitations.

First, a two-variable Granger-Causality test without considering the effect of other variables is subject to possible specification bias. As pointed out by Gujarati (1995), a causality test is sensitive to model specification and the number of lags. It would reveal different results if it was relevant and was not included in the model. Therefore, the empirical of a two-variable Granger-Causality are fragile because of this problem. Second, time series data are often non-stationary. This situation could exemplify the problem of spurious regression. Gujarati (1995) has also said that when the variables are integrated, the F-test procedure is not valid, as the test statistics do not have a standard distribution. Although researchers can still test the significance of individual coefficients with t-statistic, one may not be able to use F-statistic to jointly test the Granger-Causality. Enders (2004) proved that in some specific cases, using F-statistic to jointly test first differential VAR is permissible. First differential VAR also has its limitations which cannot be employed universally. To conclude, because of the probable shortcomings of specification bias and spurious regression, this study does not carry out traditional Granger-Causality procedure to test the relationship between growth and AFTA in ASEAN-5, but improved Granger-Causality procedure instead.

3.4.3 Economic Growth and Unit Root Test

The stationarity of variables can be checked by finding out if the time series contains a unit root. This study uses the Augmented Dickey Fuller (ADF) test for unit roots. The ADF test includes the extra lagged terms of the dependent variables in order to eliminate autocorrelation (Sridharan 2009). The ADF test statistic has the same asymptotic distribution as the Dickey Fuller (DF) statistic, so same critical values can be used. The ADF test expresses the following regression equation:

Equation 3.5:-

$$\Delta Xt = \delta_0 + \delta_1 t + \delta_2 X_{t-1} + \sum_{t=1}^{K} \propto_i \Delta X_{t-1} + \mu_t$$

The ADF regression test for the existence of unit root of Xt, namely in the logarithm of all variables at time t. Here,ΔX_{t-i}, shows the 1st differences with k lags. On the other hand $\mu_t$adjusts the error of autocorrelation. Itrequires to estimate α_i and the coefficients δ_0 , $\delta_1$and δ_2 . The null and alternative hypotheses for the existenceof unit root in variable X_t are as follows:

$$H_0 : \delta_2 = 0$$

$$H_A : \delta_2 < 0$$

Before testing for causality, we checked for the stationarity of the variables by means of the Augmented Dickey-Fuller (ADF) test. The one tail T-Statistic test is employed to test the variables used in this study. It is important to ensure that the u_t series is white noise. If the error terms u_t is auto correlated, then this test can be conducted by adding the lagged values of the dependent variables *Yt* in the preceding equations. In this study, we use the full specification of equation by adding the lagged terms, in the test regression. The T-statistical test is used to investigate the causal relationship between variables. The basic principle of the T-Statistic test analysis is to investigate if lagged values of one variable are significant in explaining another variable in the same system. Simple T-Statistic test by lagged values of variables A and B. It is then tested whether the co-efficiency of the lagged B variables are equal to zero. If the hypothesis that the co-efficient of the lagged values of B are equal to zero is rejected, it is said that variables B, T-Statistic test variable A. In the T-statistical test, the *p*-value associated with the null hypothesis that a regression co-efficient is 0, it is the probability that a

coefficient of this magnitude or larger could have occurred by chance if the null hypothesis were true. If the *p*-value were less than or equal to 5%, then the null hypothesis is rejected in favor of the alternative hypothesis. If the *p*-value were greater than 5%, then the null hypothesis is accepted.

The ADF Unit Root Testis based on the following three regression forms:

Without Constant and Trend ……. Equation 3.6

$$\Delta Y_t = \delta Y_{t-1} + \mu_t$$

With Constant……..Equation 3.7

$$\Delta Y_t = \propto + \delta Y_{t-1} + \mu_t$$

With Constant and Trend ……..Equation 3.8

$$\Delta Y_t = \propto + \beta T + \delta Y_{t-1} + \mu_t$$

The hypothesis is:

$$H_0 : \delta = 0 \ (Unit\ Root)$$

$$H_1 : \delta \neq$$

Decision rule:

If t* > ADF critical value, ==> not reject null hypothesis, i.e., unit root exists.

If t* < ADF critical value, ==> reject null hypothesis, i.e., unit root does not exist.

For testing the first regression equation 3.8, the data will be regressed via E- View analysis software tools with the following parameter as shown below “Augmented Dickey-Fuller", "Level", "None" and type "0" in the "Unit Root Test”. The difference in unit root test will be tested using lag 2 and intercept .For testing the second regression equation 3.8, the steps are similar as previous to click for the "Unit Root Test" and choose "Augmented Dickey-Fuller", "Level", "0" and "Intercept" in the dialogue box as shown above. For testing the third regression equation 3.9, again, the steps are similar as previous to click for the "Unit Root Test" and choose "Augmented Dickey-Fuller", "Level", "0" and "Trend and Intercept" in the dialogue box instead of “Intercept”.

3.4.4 Autocorrelation Test

The fundamental assumptions in linear regression are that the error terms εi have mean zero and constant variance and uncorrelated($E_{(\varepsilon i)} = 0 , Var_{(\varepsilon i)} = \sigma^{2,} , and\ E_{(\varepsilon i \varepsilon j)} = 0$). The Durbin-Watson statistic ranges in value from 0to 4. A value near 2 indicates non-autocorrelation; a value toward 0 indicates positive autocorrelation; a value toward 4 indicates negative autocorrelation. For the purposes of testing hypotheses and constructing confidence intervals assumption of normality is included so that the $\varepsilon i are\ NID(0, \sigma^2)$. The regression problem involving time series data exhibit positive autocorrelation, the hypotheses usually considered in the Durbin-Watson test are:

$$H_0: \mathrm{p} = 0$$

$$H_0: \mathrm{p} > 0$$

The test statistic is:-

$$d = \sum_{i=2}^{n} (e_i - e_{i-1})^2 / \sum_{i=1}^{n} e_i^2$$

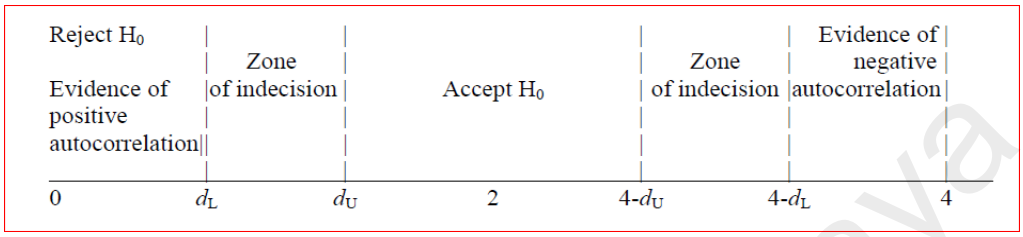
Where $e_i = y_i - {}^{n}_{y_i}$ and y_i and ${}^{n}_{y_i}$ are, respectively, the observed and predicated values of the response variable for individual i . d becomes the smaller as the serial

correlations increase. Upper and lower critical value, d_u and d_l have tabulated for different values of *K* (the number of explanatory variables) and *n*.

$$if\ d < d_l\ reject\ H_0: \rho = 0$$

$$if\ d > d_u\ do\ not\ \ reject\ H_0: \rho = 0$$

$$if\ d_l <\ d < d_u\ test\ is\ inconclusive$$



The above Durbin-Watson statistics will be used to determine the autocorrelation for each hypothesis test.

3.4.5 Ordinary least Squares and Vector Error Correction Model

This method is applied by using ADF unit root test. This technique is used to determine the OLS is stationary. The test is applied in the bivariate regression. Two procedures are included in the test is taking a residual from the linear regression and then conducting an ADF unit root test on the estimated residual. There is a relation between two variables that follows random walk pattern and can be expressed as

Equation 1 $$y_t = \beta + yx_t + \mu_t$$

Where the error term, $\mu_t$has a zero mea and constant variance, is therefore stationary, I (0). Instead, the linear combination of the variable is written as:

Equation 2 $$\mu_t = y_t - \beta + yx_t$$

The residual is obtained from the least squares of equation 1 and the estimated using the ADF procedures if $\mu_t$is stationary and the variables are cointegrated. The null hypothesis of no-co integration is $\rho = 0$ versus $H_{1:}\ \rho < 0$, The residual is estimated as follows:

Equation 3 $\Delta\mu_t = \rho\mu_{t-1} + \varepsilon_\tau$ or

Equation 4 $\Delta\mu_t = \rho\mu_{t-1} + \sum_{i=1}^{K} \Delta\ \mu_{t-1} + \varepsilon_\tau$

Where ε_τ white noise and K is the lag length of the residuals. Reject the null hypothesis of no co integration or unit root, $\rho = 0$if the calculated t statistic is greater than the critical value. That is, the residual is stationary, it doesn't contain unit root and the variables are cointegrated. Here the Eagle and Granger method is used to compute the critical value.

3.5 Data Analysis

This paper explores the causal relationship between FDI, Exports and GDP in both the short and long run. In this study, we choose ASEAN-5 countries which are Thailand, Philippines, Singapore, Indonesia and Malaysia. To capture the different stages of economic growth and for comparative analysis, data analysis is divided into two periods: the first before the implementation of AFTA (1970 to 1992) and second following the implementation of AFTA (1993 to 2013). To increase the number of observation when data for 1993 to 2013 is analyzed, dummy data with value 0 will included for year 1970 to 1992. Where else when data been analyzed for period 1970 to 1992, dummy data of value 1 will be used for year 1992-2013.The method used in this study is mainly time series econometric methods such as unit root test and linear regression model. The impact of tariffs on economic growth is determined using Common Effective Preferential Tariff (CEPT) and Most Favored Nation (MFN) rates. The MFN will be used in period P1 and CEPT will be used in P2.Detailed description of how these econometric methods are used to test this papers hypotheses are presented in the following sections. The data analysis will focus on cross-section of five countries for the period 1970 to 2013. Firstly this database analysis will investigate the bilateral links between FDI and GDP growth. Time series data will be used to analysis the ex-ante and

ex-post AFTA implementation growth. Secondly, this analysis will determine the relationship between export and GDP growth and finally to determine the relationship between import and GDP growth. The analysis will take into consideration for the GDP growth at aggregate level and disaggregated level for the individual economies. The aggregated GDP growth analysis will be further break down into 3 periods:-

Overall, the analysis will focus from 1970 to 2013 for ASEAN-5 covering 44 years. The following two periodic assessments will be carried out:

i. The period before the introduction of AFTA stretches from1970 to 1992.
ii. The AFTA period stretches from 1992 to 2013.

The aggregated analyses will be based on the period 1970-13 for the countries of Singapore, Malaysia, Thailand, Indonesia and the Philippines. Data are classified using the Harmonized System of trade at the six or eight-digit level. Tariff line data was matched with Standard International Trade Classification (SITC) data using revision 3 codes to define commodity group. This is necessary as the most disaggregated import data available for ASEAN countries from COMTRADE are at the HS 6-digit level. The sample is limited to the period 1993 to 2011.

The data source for all variables was drawn from the World Development Indicators CD-ROM 2014 and the Key Indicators of Developing Asian and Pacific Countries, published by the Asian Development Bank. All equations are estimated using time series data for the five ASEAN-5 countries. We excluded the other ASEAN countries because their time series are not long enough for econometric assessment. The time series process expands the sample size to 210 (5 countries x 42 years). Due to the nature of the data (a combination of cross-section and time series data), it is likely that the

regression disturbances would be heteroscedastic, as well as, autoregressive. For this reason, a variation of the generalized least square is the chosen method used in the analysis. Following the assumption of the error terms to follow a first order autoregressive trend, a full cross-sectional and time series autoregressive model is estimated (see Kmenta 1986).

3.6 Summary

We explained in this chapter the methodology and data that will be used to examine the impact of AFTA on the five pioneering ASEAN members. Arguably the most sophisticated, the VEC model pioneered by Engle and Granger (1987) helps establish causality and its direction using time series data. Hence, we expect to provide a more robust assessment of the impact of AFTA on the ASEAN-5 members than what has been done in the past. All the actual variable GDP, FDI, export, Import data and tariff will be logged using 1992 as a base year with USD currency. The weighted mean tariff date been used in the time series test. In Granger Causality test tariff will be used as an influencer which cause changes FDI, GDP, export and import growth.

CHAPTER 4: GDP GROWTH

4.1 Introduction

The arguments supporting the role of tariff liberalization on GDP growth is predicated on the logic that falling tariffs will attract imports and stimulate exports that will offer scale in export markets and competition from imports that will stimulate efficiency improvements (Krueger, 1980). Indeed, despite the use of import-substitution policies behind high tariffs, Japan, South Korea and Taiwan eventually enjoyed rapid growth following a fall in tariffs (World Bank, 1993). Hence, it will be useful to examine such a tariff-based liberalization in the ASEAN-5 as these countries faced gradual deregulation in tariffs, and under the AFTA process a multilateral program to reduce tariffs.

Thus, in this chapter we carry out the empirical analysis of the impact of AFTA on GDP growth in the ASEAN-5 by comparing the impacts in periods P1 andP2, and in the overall period P3. The purpose is to examine if the deregulation processes under the AFTA regime has generated stronger GDP growth than in the period prior to that in the ASEAN-5. We first analyze the growth impact of GDP on the ASEAN economies econometrically over the complete period P3 before examining them separately under the sub-periods of P1 and P2. This assessment will allow us to see if the gradient of growth is stronger after the introduction of AFTA. It helps answer hypothesis one of our thesis, which is whether the introduction of AFTA through tariff reduction helped generate stronger GDP growth among the ASEAN-5 countries.

The rest of the chapter is organized as follows. Section 4.2 discusses GDP growth over the period before and after the introduction of AFTA in 1992 among the ASEAN-5

economies. Section 4.3 examines econometrically the relationship between changes in tariffs and GDP growth. Section 4.4 presents the chapter summary.

4.2 Econometric analysis

The econometric analysis of the impact of changes in tariff on GDP among the ASEAN-5 is carried out stepwise through the Augmented Dicker Fuller (ADF) test, Durbin-Watson (DW) test and eventually the Granger Causality test. The following hypotheses are analyzed in this section:-

H_0: Lowering tariff does Granger cause GDP growth.
H_1: Lowering tariff Granger does not cause GDP growth.

This is carried out first by subjecting the GDP and tariff series of the ASEAN-5 to the ADF test for stability and DW test for autocorrelation. It is only after ensuring that both series are stable and not suffering from serial correlation we attempt to test for a causal relationship between changes in tariffs and GDP growth.

4.3 Period P1

We analyze econometrically the first hypothesis over the period 1970-1992, i.e. p1. The GDP and tariff data series are subjected to the ADF and DW statistics tests first before the Granger causality test is performed.

4.3.1 Augmented Dickey Fuller test

Table 4.1 presents GDP data from 1970 to 1992 of the ASEAN-5 countries, and at the overall aggregated level. As can be seen the second differenced series of all the countries are stable as the ADF t-statistic passed the test for stability at the 1% level.

Table 4.1: ADF test result for GDP data in Period P1

Countries	ADF T-Stat	level 1%	level 5%	level 10%	I(d)
ASEAN-5	(-4.44)***	-3.8	-3.02	-2.65	I(1)
Malaysia	(-4.46)***	-3.8	-3.02	-2.65	I(1)
Indonesia	(-4.42)***	-3.8	-3.02	-2.65	I(1)
Thailand	(-4.46)***	-3.8	-3.02	-2.65	I(1)
Philippines	(-4.44)***	-3.8	-3.02	-2.65	I(1)
Singapore	(-4.45)***	-3.8	-3.02	-2.65	I(1)

Note : *** significant at the 1% level. *Figures in parenthesis are F- statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (2014) via E-Views Packages 9.0 application.

The same can be said of the tariff (MFN) series, with the ADF test statistics of all the ASEAN-5 members passing the stability test at the 1% level (Table 4.2).

Table 4.2: ADF test result for Tariffs data in Period P1

Countries	ADF T-Stat	level 1%	level 5%	level 10%	I(d)
ASEAN-5	(-4.44)***	-3.8	-3.02	-2.65	I(1)
Malaysia	(-4.42)***	-3.8	-3.02	-2.65	I(1)
Indonesia	(-4.43)***	-3.8	-3.02	-2.65	I(1)
Thailand	(-4.47)***	-3.8	-3.02	-2.65	I(1)
Philippines	(-4.47)***	-3.8	-3.02	-2.65	I(1)
Singapore	(-4.32)***	-3.8	-3.02	-2.65	I(1)

Note : *** significant at the 1% level. *Figures in parenthesis are F- statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0.

Having established the stability of the GDP and tariff data series over the period P1, we proceed with the DW test in the next section.

4.3.2 Autocorrelation test

The Durbin-Watson test was applied over the period P1 for GDP data to ensure that the data series does not suffer from serial correlation problems. Table 4.3 shows the results

over the period1970-1992 (period P1). Overall, the results of all the countries show non-existence of autocorrelation, and hence, we can accept the null hypothesis.

Table 4.3: Durbin-Watson test for GDP data in Period P1

Countries	H_0	d_L	d_u	DW	4 - d_u	4 - d_L	H_1
ASEAN-5	Accept	0.99	1.17	(2.05)**	2.83	3.01	Reject
Malaysia	Accept	0.99	1.17	(2.00)**	2.83	3.01	Reject
Indonesia	Accept	0.99	1.17	(2.00)**	2.83	3.01	Reject
Thailand	Accept	0.99	1.17	(2.00)**	2.83	3.01	Reject
Philippines	Accept	0.99	1.17	(2.00)**	2.83	3.01	Reject
Singapore	Accept	0.99	1.17	(2.00)**	2.83	3.01	Reject

Note: Null hypothesis accepted at 5% significance level. DW values are in parenthesis.
Source: Computed using data from IMF (2014) via E-Views Packages 9.0 application.

The Durbin-Watson test was applied over the period P1 on the tariff (MFN) data to ensure that the data series does not suffer from serial correlation problems. Table 4.4 shows the results over the period 1970-1992 (period P1).Overall, the results of all the countries show non-existence of autocorrelation, and hence, we can accept the null hypothesis.

Table 4.4:Durbin-Watson test result for tariffs data in Period P1

Countries	H_0	d_L	d_u	DW	4 - d_u	4 - d_L	H_1
ASEAN-5	Accept	0.99	1.17	(2.00)**	2.83	3.01	Reject
Malaysia	Accept	0.99	1.17	(2.00)**	2.83	3.01	Reject
Indonesia	Accept	0.99	1.17	(2.00)**	2.83	3.01	Reject
Thailand	Accept	0.99	1.17	(2.00)**	2.83	3.01	Reject
Philippines	Accept	0.99	1.17	(2.00)**	2.83	3.01	Reject
Singapore	Accept	0.99	1.17	(2.00)**	2.83	3.01	Reject

Note: Null hypothesis accepted at 5% significance level. DW values are in parenthesis.
Source: Computed using data from IMF (2014) via E-Views Packages 9.0 application.

The results indicate that both the GDP and the tariff data series of the ASEAN-5 are stable and do not suffer from serial correlation. Hence, we proceed to examine the relationship between changes in tariffs and GDP growth for the ASEAN-5 by deploying the Granger Causality test.

4.3.3 Granger Causality test

The Granger Causality test was executed for the period P1 in order to distinguish causal relations between tariffs and GDP over the period P1. The relationship between tariffs (MFN) and GDP over the period 1970-92 are shown in Table 4.11. The result indicates that there is no evidence to show that tariffs had a causal impact on GDP growth in the ASEAN-5 members in period P1. Hence, tariffs deregulated by ASEAN-5 countries in period P1 did not directly stimulate economic growth. It could be argued that the ASEAN-5 may have benefited from protectionist policies with average economic growth rate between 5 to 6 percent but this has to be tested statistically before it can be confirmed.

Table 4.5: Granger Causality test result for MFN and GDP in Period P1

Country	Hypotheses		F-Stat
ASEAN-5	H_1	MFN Granger causes GDP	0.00 (0.97)
	H_0	MFN does not Granger cause GDP	0.00 (0.97)
Malaysia	H_1	MFN Granger causes GDP	2.50 (1.00)
	H_0	MFN does not Granger cause GDP	0.00 (0.98)
Indonesia	H_1	MFN Granger causes GDP	3.60 (0.99)
	H_0	MFN does not Granger cause GDP	9.90 (0.99)
Thailand	H_1	MFN Granger causes GDP	5.50 (0.99)
	H_0	MFN does not Granger cause GDP	0.00 (0.97)
Philippines	H_1	MFN Granger causes GDP	0.00 (0.98)
	H_0	MFN does not Granger cause GDP	0.00 (0.99)
Singapore	H_1	MFN Granger causes GDP	2.02 (0.17)
	H_0	MFN does not Granger cause GDP	0.00 (0.97)

Note: No evidence found in the hypothesis. Figures in parenthesis are F- statistics. Test result based on lag L(2).

Source: Computed using data from IMF (2014) via E-Views Packages 9.0 application.

The Granger Causality test at the aggregated level showed that ASEAN-5 has an insignificant relationship between MFN and GDP growth in the period P1.This finding

supports the studies by Papageorgiou, Choski and Michaely (1990), which indicate that tariff liberalization found not significant beneficial change to economic growth. Since there existed no statistically relationship between MFN and GDP growth we did not attempt to determine the sign of the relationship between these variables to establish the type of relationship.

4.4 Period P2

The same econometric techniques of ADF, Durbin-Watson and Granger Causality are used to analyze the impact of tariff reduction on GDP in the period P2. The P2 period stretches from 1992 to 2013, which is the post-AFTA period. As noted earlier, the analysis targeted liberalization using the MFN, CEPT and MFN + CEPT with GDP growth rate as the dependent variable.

4.4.1 Augmented Dickey-Fuller test

In order to test the data stationary level, ADF test was applied for GDP data over the period P2. The result been tabulated in Table 4.6 as shown below. The ADF test for GDP for the period P2 has shown stationary level. This result allowed the data to be tested for Granger Causality test. Based on the results above we can say that there is no stationarity problems associated with the error term as the results are significant at the 1% level in the all the country cases.

Table 4.6: ADF test result for GDP data in Period P2

Countries	ADF T-Stat	level 1%	level 5%	level 10%	I(d)
ASEAN-5	(-4.51)***	-4.49	-3.65	-3.26	I(1)
Malaysia	(-4.85)***	-4.49	-3.65	-3.26	I(1)
Indonesia	(-4.74)***	-4.49	-3.65	-3.26	I(1)
Thailand	(-3.87)***	-2.68	-1.95	-1.6	I(1)
Philippines	(-4.79)***	-4.49	-3.65	-3.26	I(1)
Singapore	(-4.82)***	-4.49	-3.65	-3.26	I(1)

Note : *** significant at the 1% level. *Figures in parenthesis are F-statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (2014) via E-Views Packages 9.0 application.

The total tariff rate was computed based on CEPT and MFN tariff rates taken together. These two tariff rates were merged. The ADF test was used to test the stationary level of the combined rates. The results are tabulated in Table 4.7 as shown below. It can be seen that the ADF t-statistics is significant at the 1% level demonstrating that the tariff series is stable.

Table 4.7: ADF test result for Tariffs data in Period P2

Countries	ADF T-Stat	level 1%	level 5%	level 10%	I(d)
ASEAN-5	(-4.61)***	-4.49	-3.65	-3.26	I(1)
Malaysia	(-5.81)***	-4.49	-3.65	-3.26	I(1)
Indonesia	(-4.92)***	-4.49	-3.65	-3.26	I(1)
Thailand	(-5.22)***	-4.49	-3.65	-3.26	I(1)
Philippines	(-4.64)***	-4.49	-3.65	-3.26	I(1)
Singapore	(-4.84)***	-4.49	-3.65	-3.26	I(1)

Note : *** significant at the 1% level. *Figures in parenthesis are F-statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (2014) via E-Views Packages 9.0 application.

Based on the ADF test for both the GDP and tariff series there is no evidence of the existence of non stationarity of the data. We now proceed to test for autocorrelation.

4.4.2 Autocorrelation test

Table 4.8, presents the Durbin-Watson results for GDP over the period P2. The Durbin-Watson results of all the ASEAN-5 members fell in accepted zone therefore H_0 is accepted, with the assumption that it does not bias the relationship between tariffs and GDP over the period P2.

Table 4.8: Durbin-Watson test result for GDP data in period P2

Countries	H_0	d_L	d_u	DW	4 - d_u	4 - d_L	H_1
ASEAN-5	Accept	0.99	1.17	(2.02)**	2.83	3.01	Reject
Malaysia	Accept	0.99	1.17	(2.06)**	2.83	3.01	Reject
Indonesia	Accept	0.99	1.17	(2.04)**	2.83	3.01	Reject
Thailand	Accept	0.99	1.17	(1.98)**	2.83	3.01	Reject
Philippines	Accept	0.99	1.17	(2.03)**	2.83	3.01	Reject
Singapore	Accept	0.99	1.17	(2.04)**	2.83	3.01	Reject

*Note: Null hypothesis accepted at **(5%) significance level. DW values are in parenthesis*

Source: Computed using data from IMF (2014) via E-Views Packages 9.0 application.

Tariffs (CEPT+MFN) were also subjected to the Durbin Watson test. Table 4.9 shows the results for all the five ASEAN countries under study. The Durbin-Watson test results fell in accepted zone, and therefore, H_0 are accepted. Hence, we can take that there exists no serial correlation involving the tariff data series over period P2.

Table 4.9: Durbin-Watson test for tariff MFN+ CEPT in Period P2

Countries	H_0	d_L	d_u	DW	4 - d_u	4 - d_L	H_1
ASEAN-5	Accept	0.99	1.17	(1.9)**	2.83	3.01	Reject
Malaysia	Accept	0.99	1.17	(2.02)**	2.83	3.01	Reject
Indonesia	Accept	0.99	1.17	(2.05)**	2.83	3.01	Reject
Thailand	Accept	0.99	1.17	(1.95)**	2.83	3.01	Reject
Philippines	Accept	0.99	1.17	(2.02)**	2.83	3.01	Reject
Singapore	Accept	0.99	1.17	(2.04)**	2.83	3.01	Reject

*Note: Null hypothesis accepted at **(5%) significance level. DW values are in parenthesis.*

Source: Computed using data from IMF (2014) via E-Views Packages 9.0 application.

Given that both the GDP and the tariff data series are stable and clean of serial correlation we proceed to analyze the relationship between change sin tariffs and GDP growth by deploying the Granger causality test in the next section.

4.4.3 Granger Causality test

The impact of overall tariffs on GDP is tabulated in Table 4.10 below. The results show that tariff liberalization has had no significant impact on the GDP growth rate of the pioneering ASEAN-5 countries together, and individually of Indonesia, Malaysia, the Philippines and Thailand. It has a strong impact in Singapore. However, since Singapore had largely deregulated tariffs well before the introduction of AFTA this relationship could be consequence of liberalization in the other ASEAN economies.

Table 4.10: Granger Causality test result for Total Tariff and GDP in Period P2

Country	Hypotheses		F-Stat
ASEAN-5	H_0	Tariff Granger causes GDP growth	0.19 (0.66)
	H_1	Tariff does not Granger cause GDP growth	0.01 (0.91)
Malaysia	H_0	Tariff Granger causes GDP growth	0.66 (0.42)
	H_1	Tariff does not Granger cause GDP growth	0.47 (0.49)
Indonesia	H_0	Tariff Granger causes GDP growth	0.04 (0.82)
	H_1	Tariff does not Granger cause GDP growth	0.25 (0.62)
Thailand	H_0	Tariff Granger causes GDP growth	0.14 (0.71)
	H_1	Tariff does not Granger cause GDP growth	0.03 (0.85)
Philippines	H_0	Tariff Granger causes GDP growth	0.04 (0.82)
	H_1	Tariff does not Granger cause GDP growth	0.02 (0.87)
Singapore	H_0	Tariff Granger causes GDP growth	15.7 (0.00***)
	H_1	Tariff does not Granger cause GDP growth	0.09 (0.76)

*Note: *** Significant at 1% level. Figures in parenthesis are F- statistics. Test result based on lag L(2).*

Source: Computed using data from IMF (2014) via E-Views Packages 9.0 application.

Our results largely concur with the findings of Richard (2007) who found that the growth rate in the period pre-liberalization is not statistically different from the period after liberalization, when compared to that experienced by countries that did not liberalize their trade policies over the same period. In other words, we can say that the policies before and during the implementation of AFTA has had no significant statistical impact on GDP growth of Indonesia, Malaysia, the Philippines and Thailand. However, the results show a strong impact from the AFTA process in Singapore since 1992. Indeed, the OLS regression run to establish the sign of the independent variable of tariffs showed a negative sign. Since the coefficient was -0.04 its impact on GDP growth was marginal. The results seem to suggest the liberalization processes of AFTA seem to have benefited Singapore, which is the most tariff-liberal country in ASEAN.

4.5 Period P3

The analysis using time series data from 1970 to 2013 with subsequent analysis for period before AFTA (1970 to 1992) and after AFTA (1993 to 2103). The analysis using the same econometric technical Augmented Dickey-Fuller test, autocorrelation test, Granger Causality test, Eagle and granger test as well Durbin-Watson test

4.5.1 Augmented Dickey-Fuller test

Before testing for causality, we checked for the stationarity of the variables by means of the ADF test. The results presented in Table 4.11 reveal that the second differenced GDP series for all the countries are stationary. The critical value of the t-statistics for the ASEAN-5 of -6.44 is less than -4.20 at the 1% significance level. Thus, we can accept the Ho denoting that the first difference of the GDP series is stationary.

Table 4.11: ADF test result for GDP data in Period P3

Countries	ADF T-Stat	level 1%	level 5%	level 10%	I(d)
ASEAN-5	(-6.44)***	-4.2	-3.52	-3.19	I(1)
Malaysia	(-6.44)***	-4.2	-3.52	-3.19	I(1)
Indonesia	(-6.37)***	-4.2	-3.52	-3.19	I(1)
Thailand	(-6.42)***	-4.2	-3.52	-3.19	I(1)
Philippines	(-6.41)***	-4.2	-3.52	-3.19	I(1)
Singapore	(-6.41)***	-4.2	-3.52	-3.19	I(1)

Note : ***stationary at 1%. Figures in parenthesis are t-statistics. I(d) level of differentiation.

Source: Computed using data from IMF (2014) via E-Views Packages 9.0 application.

The first differenced tariff data series over period P3 in Table 4.12 also passed the stationary ADF test. The countries data show statistical significance at the 1% level except for Thailand, which is only significant at the 5% level.

Table 4.12: ADF test result for tariff data in Period 3.

Countries	ADF T-Stat	level 1%	level 5%	level 10%	I(d)
ASEAN-5	(-6.43)***	-4.2	-3.52	-3.19	I(1)
Malaysia	(-6.38)***	-4.2	-3.52	-3.19	I(1)
Indonesia	(-6.36)***	-4.2	-3.52	-3.19	I(1)
Thailand	(-6.85)***	-4.2	-3.52	-3.19	I(1)
Philippines	(-6.36)***	-4.2	-3.52	-3.19	I(1)
Singapore	(-6.19)***	-4.2	-3.52	-3.19	I(1)

Note : *** significant at the 1% level. *Figures in parenthesis are F-statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (2014) via E-Views Packages 9.0 application.

4.5.2 Autocorrelation test

The DW statistic ranges in value from 0 to 4. A value near 2 indicates non-autocorrelation, while a value toward 0 indicates positive autocorrelation and a value toward 4 indicates negative autocorrelation. All the results are shown Table 4.13 based

on second order difference with 2 lags. The DW statistics for the test result fell in the accepted zone for all the ASEAN-5 members (see Table 4.13), which means that the time series for all the countries do not suffer from autocorrelation. For Malaysia, Thailand, Indonesia and Philippines there is no evidence of exit for positive and negative autocorrelation except for Singapore, which has a negative autocorrelation.

Table 4.13: Durbin-Watson test result for GDP data in Period P3

Countries	H_0	d_L	d_u	DW	4 - d_u	4 - d_L	H_1
ASEAN-5	Accept	0.83	1.97	(2.01)**	2.03	3.17	Reject
Malaysia	Accept	0.83	1.97	(2.01)**	2.03	3.17	Reject
Indonesia	Accept	0.83	1.97	(2.01)**	2.03	3.17	Reject
Thailand	Accept	0.83	1.97	(2.01)**	2.03	3.17	Reject
Philippines	Accept	0.83	1.97	(2.01)**	2.03	3.17	Reject
Singapore	Accept	0.83	1.97	(2.01)**	2.03	3.17	Reject

*Note: Null hypothesis accepted at **(5%) significance level. DW values are in parenthesis*

Source: Computed using data from IMF (2014) via E-Views Packages 9.0 application.

Both Durbin-Watson tests for GDP and tariff has shown similar results and they fall in the acceptance region, determining that the model has either positive or negative autocorrelation (Table 4.14). Therefore we should not reject the null hypothesis; there is possibility of a relationship between tariff and GDP growth, which allows further testing using the Ganger Causality test. All the countries shown one exist of positive and negative autocorrelation for tariffs data for the period P3. The results of the null hypothesis indicate that no autocorrelation exists for the time series data from 1970 to 2011 for tariff data.

Table 4.14: Durbin-Watson test result for Tariffs data in Period P3

Countries	H_0	d_L	d_u	DW	4 - d_u	4 - d_L	H_1
ASEAN-5	Accept	0.83	1.97	(2.00)**	2.03	3.17	Reject
Malaysia	Accept	0.83	1.97	(2.00)**	2.03	3.17	Reject
Indonesia	Accept	0.83	1.97	(2.00)**	2.03	3.17	Reject
Thailand	Accept	0.83	1.97	(2.01)**	2.03	3.17	Reject
Philippines	Accept	0.83	1.97	(2.00)**	2.03	3.17	Reject
Singapore	Accept	0.83	1.97	(2.00)**	2.03	3.17	Reject

*Note: Null hypothesis accepted at **(5%) significance level. DW values are in parenthesis.*

Source: Computed using data from IMF (2014) via E-Views Packages application 9.0

The results show that both the GDP and tariff data of the ASEAN-5 over the period 1970-2013 is stable and do not suffer from serial correlation. Hence, we proceed to analyze the relationship between changes in tariffs and GDP growth among the ASEAN-5 over the period P3 in the next section.

4.5.3 Granger Causality test

Table 4.15 shows the results of the Granger causality test examining the relationship between tariffs and GDP. Only one of the results is significant in which changes in tariffs Granger cause GDP growth in Singapore. The results were not significant for all other remaining ASEAN-5 members suggesting that non-tariff factors have been the prime drivers of GDP growth in these countries. However, we did not examine the counterfactual evidence to confirm this point.

Table 4.15: Granger Causality test result for Tariffs in Period P3

Country	Hypotheses		F Stat
ASEAN-5	H_0	Tariffs Granger causes GDP	1.11 (0.29)
	H_1	Tariffs does not Granger cause GDP	0.00 (1.00)
Malaysia	H_0	Tariffs Granger causes GDP	1.26 (0.26)
	H_1	Tariffs does not Granger cause GDP	0.00 (0.95)
Indonesia	H_0	Tariffs Granger causes GDP	1.16 (0.28)
	H_1	Tariffs does not Granger cause GDP	0.00 (0.97)
Thailand	H_0	Tariffs Granger causes GDP	0.06 (0.79)
	H_1	Tariffs does not Granger cause GDP	0.00 (0.98)
Philippines	H_0	Tariffs Granger causes GDP	1.54 (0.22)
	H_1	Tariffs does not Granger cause GDP	0.00 (0.96)
Singapore	H_0	Tariffs Granger causes GDP	4.98**(0.03)
	H_1	Tariffs does not Granger cause GDP	0.00 (0.93)

*Note:**, Significant at 5 % level. Figures in parenthesis are F- statistics. Test result based on lag L(2).*

Source: Computed using data from IMF (2014) via E-Views Packages application 9.0

Viewed by individual countries, only Singapore showed a statistically significant relationship (at 5%) between tariffs and GDP growth over the period P3. A separate OLS regression showed a negative sign demonstrating that falling tariffs has stimulated GDP growth in Singapore. Hence, tariff liberalization has had a positive impact on GDP in Singapore. However, since Singapore had largely deregulated its tariffs by 1990 it can be argued that this positive development could be a consequence of liberalization experienced by other members of ASEAN, as well as, non-ASEAN trading partners

4.6 Summary of Granger Causality Results

Based on analysis, these results suggest that there is no long-run relationship between re GDP and tariff reduction for ASEAN-5 except for Singapore which show there is causal relationship for short and long run,

Period	P3	P1	P2
ASEAN-5			
Malaysia			
Indonesia			
Thailand			
Philippines			
Singapore	H_0 **		H_0 ***

Note: Significant indication **5% , ***1%

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

There is no feedback relationship between GDP trade liberalization by lowering the tariff for Thailand, Malaysia, Philippines and Indonesia, statistically not significant at 1 percent or 5 percent. These findings does not support trade liberalization hypothesis that GDP and lowering are highly correlated in trade linkages. There are no unidirectional or bidirectional relationship for ASEAN-5 except Singapore. Base on this finding we can conclude that there is no direct causal relationship between GDP growth and tariff reduction.

4.7 Summary

Using arguably the most robust econometric methodology, i.e. the Granger causality test, we reexamined the impact of tariff liberalization over the two distinct periods of pre-AFTA and post-AFTA in this chapter. Except for Singapore we did not find a significant relationship between tariff liberalization and GDP growth in the five pioneering countries together, and Indonesia, Malaysia, the Philippines and Thailand in all the periods. This relationship in Singapore was significant but only in the period P2. The results are robust as all the data passed the stationarity and autocorrelation tests.

The significant impact of tariff liberalization on GDP growth in Singapore may have been caused by the liberalization faced by the remaining four members as Singapore

had already liberalized its tariffs before AFTA was introduced. Hence, it can be said that liberalization in itself may not be a panacea or recipe for quickening GDP growth. While that is the case it has also to be established that the counterfactual may not be possible as the introduction of the World Trade Organization (WTO) in 1995 had already made tariff liberalization mandatory. Being among the pioneering members the five countries in general but Indonesia, Malaysia, the Philippines and Thailand in particular, may have benefited from the smooth transition into the WTO regime following the introduction of AFTA in 1992.

CHAPTER 5: FOREIGN DIRECT INVESTMENT GROWTH

5.1 Introduction

This chapter focuses on the impact of tariff liberalization on foreign direct investment (FDI) inflows before and after the implementation of AFTA in the five pioneering ASEAN market economies. The assessment follows the same format as chapter four with descriptive and econometric analyses. The relationship between FDI and tariff rates is analyzed over the periods P1 and P2 using CEPT and MFN tariff rates. The establishment of a causal link is important as FDI inflows are viewed as critical to stimulate GDOP growth and international competitiveness. Caves (1974) had argued that FDI brings with it not just scarce capital, but also embodied technology and productive efficiency as foreign firms will offer greater competition and demonstration effect.

The focus of the chapter is on testing whether the lowering of tariffs has had a positive impact on FDI inflows into the five ASEAN market economies. We examine whether changes in tariffs shows a causal relationship with FDI inflows in the five pioneering market economies of ASEAN. The rest of the chapter is organized as follows. Section 5.2 discusses growth in net FDI inflows into the ASEAN-5 over the period before and after the introduction of AFTA in 1992. Section 5.3 examines econometrically the relationship between changes in tariffs and net FDI inflows. Section 4.4 presents the chapter summary.

5.2 Econometrics Analysis

The econometric analysis of the impact of changes in tariff on FDI among the ASEAN-5 is carried out stepwise through the Augmented Dicker Fuller (ADF) test, Durbin-

Watson (DW) test and eventually the Granger Causality test. The following hypotheses are analyzed in this section:-

H_0: Lowering tariff does Granger cause FDI growth.
H_1: Lowering tariff Granger does not cause FDI growth.

This is carried out first by subjecting the FDI and tariff series of the ASEAN-5 to the ADF test for stability and DW test for autocorrelation. It is only after ensuring that both series are stable and not suffering from serial correlation we attempt to test for a causal relationship between changes in tariffs and FDI growth.

5.3 Period P1

In this section we examine the relationship between changes in tariffs on net FDI inflows over the period P1. We use only MFN tariffs as the CEPT was not in existence then.

5.3.1 Augmented Dickey Fuller Test

Table 5.1 shows the ADF tests results. It can be seen that all the results are stable as they are significant at the 1% level.

Table 5.1: ADF test result for ASEAN-5, FDI for period P1

FDI Data	ADF	level 1%	level 5%	level 10%	I(d)
ASEAN-5	-4.35***	--2.68	-1.95	-1.60	I(1)
Malaysia	-4.39***	-3.80	-3.02	-2.65	I(1)
Indonesia	-4.45***	-3.80	-3.02	-2.65	I(1)
Thailand	-4.24***	-3.80	-3.02	-2.65	I(1)
Philippines	-4.35***	--2.68	-1.95	-1.60	I(1)
Singapore	-4.42***	-3.80	-3.02	-2.65	I(1)

Note : *** significant at the 1% level. *Figures in parenthesis are F- statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

The ADF test indicates data is stationary for all countries at one percent level. This allowed the Granger Causality test to be proceed for the following econometric procedures.

5.3.2 Durbin-Watson Test

The Durbin-Watson test shows that no autocorrelation exists with the net FDI inflow data series over the period P1 (see Table 5.2). All the Durbin-Watson results using the second difference fall within the H_0 acceptable zone. Hence, the evidence shows the non-existence t of autocorrelation among all the ASEAN-5.

Table 5.2: Durbin-Watson test results, Net FDI Inflows, period P1

MFN	H_0	d_l	d_u	DW t	$4-d_u$	$4-d_l$	H_1
ASEAN-5	Accept	0.99	1.17	(2.00)**	2.3	3.01	Reject
Malaysia	Accept	0.99	1.17	(2.00)**	2.3	3.01	Reject
Indonesia	Accept	0.99	1.17	(2.01)**	2.3	3.01	Reject
Thailand	Accept	0.99	1.17	(1.99)**	2.3	3.01	Reject
Philippine	Accept	0.99	1.17	(1.99)**	2.3	3.01	Reject
Singapore	Accept	0.99	1.17	(2.00)**	2.3	3.01	Reject

Note:**, shows significance levels at 5%. *Figures in parenthesis are t-statistics.*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

It is clear that the preconditions of the Granger causality test, i.e. the stationary data series, and the absence of serial correlation are met. Hence, we proceed with the Granger causality test in the next section.

5.3.3 Granger Causality test

Table 5.3 indicated the relationship between tariff reduction and FDI growth. This result tabulated for specific period P1. Detail output result attach in the appendix for the respective country. The results show that there is no evidence of causation between

changes in tariffs and net FDI inflows among all the ASEAN-5 countries over period P1.

Table 5.3: Granger Causality Test, ASEAN-5, FDI and MFN, period P1

Country	Hypothesis		F Stat
ASEAN-5	H_0	Tariffs Granger causes FDI	0.00 (0.93)
	H_1	Tariffs does not Granger cause FDI	6.2 (0.99)
Malaysia	H_0	Tariffs Granger causes FDI	0.03 (0.84)
	H_1	Tariffs does not Granger cause FDI	0.00 (0.95)
Indonesia	H_0	Tariffs Granger causes FDI	0.01 (0.90)
	H_1	Tariffs does not Granger cause FDI	0.00 (0.99)
Thailand	H_0	Tariffs Granger causes FDI	0.01 (0.89)
	H_1	Tariffs does not Granger cause FDI	4.0 (0.99)
Philippines	H_0	Tariffs Granger causes FDI	0.13 (0.71)
	H_1	Tariffs does not Granger cause FDI	1.8 (0.99)
Singapore	H_0	Tariffs Granger causes FDI	0.01 (0.91)
	H_1	Tariffs does not Granger cause FDI	1.95 (0.17)

Note: None of the results are significant at 10%, 5% and1%. *Figures in parenthesis are t-statistics. Test result based on lag L(2).*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

Hence, the evidence over the shorter period of 1970-92 and the longer period are the same, i.e. there is no evidence to show that net FDI inflows have been affected by changes in tariffs among the ASEAN-5 countries. In the absence of causation we abandoned the need for identifying the sign of relationship between tariffs and net FDI inflows among the ASEAN-5 countries

5.4 Period P2

We undertake the same set of econometric tests for the period P2, which is over the years 1992-2013. Tariffs that matter in this period are the MFN and CEPT.

5.4.1 Augmented Dickey Fuller Test

Table 5.4 shows the output summary of the ADF test results for net FDI inflows, which shows the data for all the ASEAN-5 countries are stationary based on second order differences. The ADF test indicates data is stationary for all countries at one percent level. This allowed the Granger Causality test to be proceed for the following econometric procedures.

Table 5.4: ADF result, ASEAN-5, FDI, period P2

GDP Data	ADF	level 1%	level 5%	level 10%	I(d)
ASEAN-5	(-3.50)***	-2.68	-1.95	-1.60	I(1)
Malaysia	(-7.13)***	-4.49	-3.65	-3.26	I(1)
Indonesia	(-4.71)***	-4.49	-3.65	-3.26	I(1)
Thailand	(-3.73)***	-2.68	-1.95	-1.60	I(1)
Philippines	(-4.50)***	-3.78	-3.01	-2.64	I(1)
Singapore	(-3.75)***	-2.68	-1.95	-1.60	I(1)

Note : *** significant at the 1% level. *Figures in parenthesis are F- statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

5.4.2 Durbin-Watson

The Durbin-Watson test results show that the net FDI inflow series of all the ASEAN economies do not suffer from autocorrelation over the period P2 (Table 5.5). All the Durbin-Watson results fall in the H_0zone.

Table 5.5: Durbin-Watson statistics, FDI, period P2

MFN	H_0	d_l	d_u	DW t	$4-d_u$	$4-d_l$	H_1
ASEAN-5	Accept	0.99	1.17	(1.58)**	2.83	3.01	Reject
Malaysia	Accept	0.99	1.17	(2.29)**	2.83	3.01	Reject
Indonesia	Accept	0.99	1.17	(2.08)**	2.83	3.01	Reject
Thailand	Accept	0.99	1.17	(1.68)**	2.83	3.01	Reject
Philippines	Accept	0.99	1.17	(1.73)**	2.83	3.01	Reject
Singapore	Accept	0.99	1.17	(1.57)**	2.83	3.01	Accept

Note:**, shows significance levels at 5%. *Figures in parenthesis are Durbin-Watson statistics.*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

It can be seen the net FDI inflow data is both stationary and free of autocorrelation in all the ASEAN-5 pioneering economies. Hence, we proceed to carry out the Granger causality test in the next section.

5.4.3 Granger Causality test

Based on the ADF and Durbin-Watson test results above we proceed with the Granger Causality test over period P2 for the ASEAN-5 economies. The results are tabulated in Table 5.6. The results show that there is causation only between overall tariffs (CEPT+MFN) and net FDI inflows in Singapore. There is no sign of causation either way between overall tariffs and net FDI inflows in the remaining four countries. Since Singapore has already liberalized tariffs prior to the introduction of AFTA the impact could be a consequence of regional linkages thriving from falling tariffs in other ASEAN economies.

Table 5.6: Granger Causality Test, ASEAN-5, FDI vs. Total Tariff, period P2

Country	Hypotheses		F Stat
ASEAN-5	H_0	Tariffs Granger causes FDI	1.76 (0.20)
	H_1	Tariffs does not Granger cause FDI	0.09 (0.76)
Malaysia	H_0	Tariffs Granger causes FDI	0.13 (0.71)
	H_1	Tariffs does not Granger cause FDI	0.12 (0.72)
Indonesia	H_0	Tariffs Granger causes FDI	0.09 (0.76)
	H_1	Tariffs does not Granger cause FDI	5.30 (0.99)
Thailand	H_0	Tariffs Granger causes FDI	1.60 (0.22)
	H_1	Tariffs does not Granger cause FDI	0.00 (0.96)
Philippines	H_0	Tariffs Granger causes FDI	0.55 (0.46)
	H_1	Tariffs does not Granger cause FDI	0.06 (0.80)
Singapore	H_0	Tariffs Granger causes FDI	6.49 ** (0.02)
	H_1	Tariffs does not Granger cause FDI	0.15 (0.69)

*Note:**, Significant at 5% level. Figures in parenthesis are F- statistics. Test result based on lag L(2).*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

5.5 Period P3

We divide the analysis into the period before (P1) AFTA was launched and after (P2) it was launched, and then the entire period (P3). The purpose is to see whether the period before the AFTA process had a different experience the liberalization initiatives became concerted and widespread after 1992.Since the series on MFN and CEPT were already tested for stability and serial correlation in chapter 4 and found to be free we undertake the ADF and Durbin-Watson tests only for net FDI inflows in this chapter.

While several studies have discussed in an anecdotal way that tariff liberalization will stimulate FDI inflows, none have actually analyzed statistically this relationship. Hence, while arguing over the positive effects of liberalization Karimi and Yusop (2009) ended analyzing quantitatively the causality relationship between FDI and economic growth.Some studies proclaimed that FDI and trade enjoy a reciprocal relationship

accommodating or complementing each other (see Culem, 1988; Ozawa, 1992; Ruggiero, 1996; and Wei, et al., 1999). Athukorala and Menon (1997) and Dobson, Wendy and Chia (1997), believe that multinational firms will be attracted to the AFTA region because of an enhanced ability to efficiently locate different stages of production throughout ASEAN and co-ordinate these activities following the move towards easing quantitative restrictions on trade. One can thus expect AFTA region to with an increase in market-seeking FDI. What this means is that the pioneering ASEAN market economies can be expected to enjoy greater inflows of FDI after 1992 (P2) as not only the infrastructure of these economies have improved but also tariffs have also fallen significantly since.

5.5.1 Augmented Dickey Fuller Test

Table 5.7; show the output summary of ADF test result for FDI. The ADF result shows consistence for the ASEAN-5 countries in term of stationary. Therefore the Granger causality test is valid for these variables. The main finding base on ADF test there is possibilities relationship between the tariff rate and FDI in all five countries, nevertheless the finding has not support to the notion that AFTA has been an effective mechanism for promoting FDI in period P3. This result tested in Granger Causality refer Table 5.9

Table: 5.7: ADF test, ASEAN-5, FDI, period P3

FDI Data	ADF	level 1%	level 5%	level 10%	I(d)
ASEAN-5	(-6.41)***	-4.19	-3.52	-3.19	I(1)
Malaysia	(-6.52)***	-4.19	-3.52	-3.19	I(1)
Indonesia	(-6.61)***	-4.19	-3.52	-3.19	I(1)
Thailand	(-6.26)***	-4.19	-3.52	-3.19	I(1)
Philippines	(-6.81)***	-4.19	-3.52	-3.19	I(1)
Singapore	(-6.54)***	-4.19	-3.52	-3.19	I(1)

Note : *** significant at the 1% level. *Figures in parenthesis are F- statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

5.5.2 Durbin-Watson test

Overall the Durbin-Watson test for FDI has shown none exit of autocorrelation issue for the time series data for the P3. All the Durbin-Watson test result obtains from ADF second difference which falls in H_0 accepted zone. All the countries has value above 2 with less than 2.25 which indicates storing evidence of none exit of autocorrelation.

Table 5.8: Durbin-Watson test for FDI for period P3

FDI Data	H_0	d_l	d_u	DW t	$4-d_u$	$4-d_l$	H_1
ASEAN-5	Accept	1.44	1.54	(2.00)**	2.46	2.55	Reject
Malaysia	Accept	1.44	1.54	(2.00)**	2.46	2.55	Reject
Indonesia	Accept	1.44	1.54	(2.01)**	2.46	2.55	Reject
Thailand	Accept	1.44	1.54	(2.00)**	2.46	2.55	Reject
Philippines	Accept	1.44	1.54	(2.00)**	2.46	2.55	Reject
Singapore	Accept	1.44	1.54	(2.00)**	2.46	2.55	Reject

*Note : **, significant at 5% level. Figures in parenthesis are t-statistics.*

Source: Computed using data from IMF (1991, 2014) Using E-Views Packages 9.0

The Durbin-Watson results, which show no autocorrelation problems, allow further testing of the relationship between FDI and tariffs in ASEAN-5 countries. Hence, we deploy the Granger causality test in the next section to examine if there exists causality between tariff liberalization and net FDI in the ASEAN-5.

5.5.3 Granger Causality test

Table 5.9 indicates the relationship between changes in tariffs and FDI growth over the periodP3.Only two results are statistically significant. The first shows that tariff reduction does not Granger cause net FDI inflows in Indonesia, while the second shows that tariff reduction does not Granger cause net FDI inflows in Thailand.

Table 5.9: Granger Causality Test, ASEAN-5, Tariff and FDI, Period P3

Country	Hypotheses		F Stat
ASEAN-5	H_0	Tariffs Granger causes FDI inflow	0.00 (1.00)
	H_1	Tariffs does not Granger cause FDI inflow	0.84 (0.36)
Malaysia	H_0	Tariffs Granger causes FDI inflow	0.00 (0.95)
	H_1	Tariffs does not Granger cause FDI inflow	1.26 (0.26)
Indonesia	H_0	Tariffs Granger causes FDI inflow	0.02 (0.86)
	H_1	Tariffs does not Granger cause FDI inflow	4.46 ** (0.04)
Thailand	H_0	Tariffs reduction Granger causes FDI inflow	0.02 (0.88)
	H_1	Tariffs does not Granger cause FDI inflow	10.1*** (0.00)
Philippines	H_0	Tariffs Granger causes FDI inflow	1.54 (0.22)
	H_1	Tariffs does not Granger cause FDI inflow	0.00 (0.96)
Singapore	H_0	Tariffs Granger causes FDI inflow	0.00 (0.92)
	H_1	Tariffs does not Granger cause FDI inflow	1.18 (0.28)

Note: S ignificance levels at 1% (***) and 5% (***) respectively. *Figures in parenthesis are t-statistics. Test result based on lag L(2).*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

Based on the empirical results, it can be seen that changes in tariffs does not Granger cause net FDI inflows in Indonesia and Thailand. However, the remaining results were

not significant for interpretation. This obviously means that there is no evidence to confirm that causality exists between changes in tariffs and net FDI inflows in Malaysia, Philippines and Singapore. In light of the lack of evidence of a significant relationship between tariffs and net FDI inflows, no attempt was made to establish the sign of the relationship between tariffs and net FDI inflows.

5.6 Summary of Granger Causality Results

The overall results show that only Singapore of the ASEAN-5 members benefitted from the AFTA process as changes in tariffs caused net FDI inflows into over the period 1970-2013. The Table 5:10 presents the results of causality test, both at the individual level and panel level. The results showed that there is no presence of bidirectional causality between foreign direct investment and tariff reduction in all the five ASEAN countries except Singapore, where there is no causality between the two, at the individual level and panel level. This is because the F-statistics for these cases indicate that the null hypothesis that economic growth does not Granger cause foreign direct investment and foreign direct investment does not Granger cause economic growth are rejected at 5% and 1% significance level for Thailand and Indonesia. That means foreign direct investment does not causes economic growth due to tariff lowering. The evidence from this empirical analysis is very clear that foreign direct investment has not causes economic growth subject to lowering tariff.

Table 5.10: Granger Causality results FDI and tariffs (ASEAN-5)

Period	P3	P1	P2
Variables	Tariffs	Tariffs	Tariffs
ASEAN-5			
Malaysia			
Indonesia	H_1**		
Thailand	H_1***		
Philippines			
Singapore			H_0**

Note: Significant at **5% and ***1%

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

Overall, the empirical results show that there is no evidence that AFTA played an important role in generating net FDI inflow growth in ASEAN-5. In the case of Singapore, we do find causality between foreign direct investment growth and tariff reduction. The one thing we have not examined here is the counterfactual, i.e. what will the scenario be if AFTA was not introduced. However, such an assessment is not within statistical methodologies. Nevertheless, it has to be acknowledged that the ASEAN-5 have largely enjoyed a general reduction in tariffs since 1970. That such a reduction is not reflected in net FDI inflows in the shorter periods for all the countries, and in Malaysia, the Philippines and Singapore is perhaps a consequence of other factors being more important in explaining these developments.

5.7 Summary

Except downswings during crises, net FDI inflows to the ASEAN-5 have remained strong throughout the period 1970-2013. However, the general argument that the liberalization of tariffs will foster more net FDI inflows is not supported by the empirical evidence from Malaysia, the Philippines and Singapore. Indonesia and Thailand showed that tariff liberalization Granger caused net FDI inflows in the long

period of 1970-2013. Indeed, these countries experience a significant fall in tariffs and changes in government policies to attract FDI inflows since the 1980s and 1990s (see Rasiah, 2009).

However, there was no evidence of changes in tariffs to influence net FDI inflows in the periods before and following the introduction of AFTA in 1992, which could be a consequence of the ASEAN-5 having pursued market-oriented policies since independence. One could argue that efforts to open of their economies more may not be as significant as the transition economies since the 190s. It can also be said that the environment acing the ASEAN-5 in the 1970s and 1980s was more favorable to attract FDI as the transition economies were closed to the foreign capital then. Nevertheless, the importance of FDI in all the five market economies cannot be dismissed as the export-oriented industries of clothing and electronics were largely driven by foreign capital (Rasiah, 2009), which may mean that other factors rather than tariffs may have been significant. In addition, there are also claims that several ASEAN economies have yet to remove the non-quantitative barriers facing trade. Hence, it will be useful for future research to examine these factors.

CHAPTER 6: TARIFF & EXPORT GROWTH

6.1 Introduction

Exports have been argued to be a key driver rapid growth and competitiveness. Bhagwati (1964) had originally argued that if the country possesses no monopoly power, the imposition of a tariff can be used as a lever with which bargain for a reduction in the tariff of a trading partner. If and when both tariffs are removed, the net effect is to increase the country's welfare above what it would have been in the absence of a tariff. This may be reason why some countries insist on reciprocity in tariff cuts beneficial (see also, Bhagwati, 1980). Indeed, the rapid growth of South Korea, Taiwan and Singapore has been attributed, among other things, to their focus on exports. The focus on exports becomes that much more important as the ASEAN-5 have oriented their economic growth primarily on the back export-orientation, especially since the 1970s, 1980s and 1990s when Indonesia, Malaysia, the Philippines and Thailand began to implement explicit export-oriented industrialization (Rasiah, 2009).

Hence, we examine in this chapter hypothesis 3, which is to analyze the relationship between changes in tariffs and changes in exports over the periods, P1, P2 and P3. This study uses exports per capita as the dependent variable and tariffs as the explanatory variable. The rest of the chapter is organized as follows. Section 6.2 analyzes the growth in exports of the ASEAN-5 over the periods 1970-92and 1992-2013. Section 6.3 examines the impact of changes in tariffs on export growth in the ASEAN-5 economies over the period 1970-2013. Sections 6.4 and 6.5 analyzed the same relationships over the periods 1970-92 and 1992-2013 respectively. Since AFTA nations faced both the MFN and the CEPT in the period 1992-2013 we adjusted and used the effective nominal

tariffs over this period. The MFN was used over the period 1970-1992. Section 6.6 presents the chapter summary.

6.2 Econometric Analysis

Since we have already tested for stability and serial correlation for the variable of tariffs, we test of these parameters for only the export series data in this chapter before undertaking the Granger causality test to analyze the relationship between changes in tariffs and exports. The econometric analysis of the impact of changes in tariff on export among the ASEAN-5 is carried out stepwise through the Augmented Dicker Fuller (ADF) test, Durbin-Watson (DW) test and eventually the Granger Causality test. The following hypotheses are analyzed in this section:-

H_0: Lowering tariff does Granger cause export growth.

H_1: Lowering tariff Granger does not cause export growth.

This is carried out first by subjecting the FDI and tariff series of the ASEAN-5 to the ADF test for stability and DW test for autocorrelation. It is only after ensuring that both series are stable and not suffering from serial correlation we attempt to test for a causal relationship between changes in tariffs and export growth.

6.3 Period P1

We undertake the same tests, ADF for stability and Durbin Watson for serial correlation before proceeding to test for causality using the Granger causality test over period p1. Since tariffs have already been tested in chapter 4, we focus here on the export series.

6.3.1 Augmented Dickey Fuller Test

Table 6.1, is tabulated based on aggregate export data from 1970 to 1992 for the ASEAN-5 as a whole, and for the individual countries. Since all ADF values fall below -3.00 they demonstrate the second difference of the export data series are stationary.

Table 6.1: ADF test, ASEAN-5, Exports, period P1

Export Data	ADF Stat	level 1%	level 5%	level 10%	*I* (*d*)
ASEAN-5	(-4.41)***	-3.80	-3.02	-2.65	I (1)
Malaysia	(-4.47)***	-3.80	-3.02	-2.65	I (1)
Indonesia	(-4.24)**	-4.49	-3.65	-3.26	I (2)
Thailand	(-4.32)**	-4.49	-3.65	-3.26	I (2)
Philippines	(-4.32)***	-4.49	-3.65	-3.26	I (1)
Singapore	(-4.42)***	-4.49	-3.65	-3.26	I (1)

Note : ***and ** significant at the 1% and 5% level, respectively. *Figures in parenthesis are F- statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

Now that the export data are stationary we proceed to test for autocorrelation. We undertake that in the next section.

6.3.2 Durbin-Watson Test

The export series for the period 1970-92 was subjected to the Durbin-Watson test to test for serial correlations. The DW statistics for all the ASEAN-5 and the five countries ranged between 2.00-2.01 demonstrating that none of them face autocorrelation problems. Hence, we accept the null hypothesis that the results are not characterized by autocorrelation problems.

Table 6.2: Durbin-Watson test, Exports, period P1

Export	H_0	d_l	d_u	DW t	$4-d_u$	$4-d_l$	H_1
ASEAN-5	Accept	0.99	1.17	(2.00)**	2.83	3.01	Reject
Malaysia	Accept	0.99	1.17	(2.00)**	2.83	3.01	Reject
Indonesia	Accept	0.99	1.17	(2.01)**	2.83	3.01	Reject
Thailand	Accept	0.99	1.17	(2.01)**	2.83	3.01	Reject
Philippines	Accept	0.99	1.17	(2.01)**	2.83	3.01	Reject
Singapore	Accept	0.99	1.17	(2.01)**	2.83	3.01	Reject

Note:**, shows significance levels at 5%. Figures in parenthesis are Durbin-Watson statistics value.

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

Now that ADF test and the DW test show that the export series is both stable and are clear of autocorrelation problems, we proceed to analyze the relationship between changes in tariffs and exports over the period p1 using the Granger Causality test.

6.3.3 Granger Causality test

Table 6.3 shows the Granger causality test results depicting the relationship between MFN tariffs and exports for the ASEAN-5 countries and these countries as a whole over the period P1. The regression on pair test execute for H_0 andH_1. It can be seen that none of the F-stats results are significant. Hence, there is no statistical evidence of a relationship between changes in tariffs and exports in the period P1.

Table 6.3: Granger Causality Test, ASEAN-5, Exports and Tariffs, period P1

Country	Hypotheses		F-Stat
ASEAN-5	H_0	Tariffs Granger cause Export	0.00 (0.97)
	H_1	Tariffs does not Granger cause export	0.00 (0.98)
Malaysia	H_0	Tariff Granger cause Export	0.00 (0.95)
	H_1	Tariff does not Granger cause export	1.3 (0.99)
Indonesia	H_0	MFN Granger cause Export	0.00 (0.98)
	H_1	Export does not Granger cause MFN	6.0 (0.99)
Thailand	H_0	MFN Granger cause Export	0.00 (0.97)
	H_1	Export does not Granger cause MFN	7.1 (0.99)
Philippines	H_0	MFN Granger cause Export	0.00 (0.92)
	H_1	Export does not Granger cause MFN	0.00 (0.98)
Singapore	H_0	MFN Granger cause Export	0.00 (0.94)
	H_1	Export does not Granger cause MFN	1.97 (0.17)

Note:( ) not significant. Figures in parenthesis are F- statistics. Test result base on lag L(2).

Source: Computed using data from IMF (2014) Using E-Views Packages 9.0

Clearly there is no evidence of tariff liberalization having stimulated export growth in the ASEAN-5 over the period 1970-92. While the test does not offer a check for the counter factual it is important to note that export growth may have been driven by other factors, such as FDI, state's role in developing infrastructure, and greater integration in export markets independent of tariffs.

6.4 Period P2

We undertake the same tests, ADF for stability and Durbin Watson for serial correlation before proceeding to test for causality using the Granger Causality test over period P2. Since tariffs have already been tested in chapter 4, we focus here on the export series.

6.4.1 Augmented Dickey Fuller Test

Table 6.4 shows the ADF test results for the export series. The ADF results show that all the t—stats falling the % significance level demonstrating that series is stationary base at the second difference of the series.

Table 6.4: ADF test, ASEAN-5, Export, period P2

Export Data	ADF Stat	level 1%	level 5%	level 10%	*I* (*d*)
ASEAN-5	(-5.28)***	-4.49	-3.65	-3.26	I (1)
Malaysia	(-6.17)***	-4.49	-3.65	-3.26	I (1)
Indonesia	(-4.86)***	-4.49	-3.65	-3.26	I (1)
Thailand	(-5.60)***	-4.49	-3.65	-3.26	I (1)
Philippines	(-5.60)***	-4.49	-3.65	-3.26	I (1)
Singapore	(-5.24)***	-4.49	-3.65	-3.26	I (1)

Note : *** significant at the 1% level. *Figures in parenthesis are F- statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

Given that the export series over the period p2 is stationary, we proceed to test the series for autocorrelation in the next section.

6.4.2 Durbin-Watson Test

The results of the Durbin-Watson test are shown in Table 6.5. The Durbin Watson statistics for all the countries fell in accepted region, which shows that none of the export series suffer from autocorrelation problems.

Table 6.5: Durbin-Watson test, ASEAN-5, Export, period P2

Export	H_0	d_l	d_u	DW t	$4-d_u$	$4-d_l$	H_1
ASEAN-5	Accept	0.99	1.17	2.06***	2.83	3.01	Reject
Malaysia	Accept	0.99	1.17	2.18***	2.83	3.01	Reject
Indonesia	Accept	0.99	1.17	2.02***	2.83	3.01	Reject
Thailand	Accept	0.99	1.17	2.05***	2.83	3.01	Reject
Philippines	Accept	0.99	1.17	2.05***	2.83	3.01	Reject
Singapore	Accept	0.99	1.17	2.05***	2.83	3.01	Reject

Note:**, shows significance levels at 5%. Figures in parenthesis are Durbin-Watson statistics value.

Source: Computed using data from IMF (2014) via E-Views Packages 9.0

The ADF and DW tests show that the export series of the ASEAN-5 over the period p2 is stable and free from autocorrelation. Hence, we proceed in the next section to undertake the Granger causality test to analyze the relationship between changes in tariffs and exports of the ASEAN-5 over the period 1992-2013.

6.4.3 Granger Causality test

Table 6.6 shows the results of the Granger Causality test between tariffs and export for the ASEAN-5 over the period P2 has shown in the below Table 6.10. Tariffs do not enjoy a Granger causality relationship with Singapore, and there is no statistical evidence of such a relationship with the Philippines and Malaysia. Changes in tariffs Granger caused export growth in Indonesia (statistically significant at 1% level) and Thailand (statistically significant at 5% level) over the period p2. The relationship is also statistically significant for ASEAN-5 as a whole but only at the 10% level. Hence, there is a causal relationship between changes in tariffs and export growth over the period P2 for Indonesia, Thailand and the ASEAN-5.

Table 6.6: Granger Causality Test, ASEAN-5, Export and Tariffs, period P2

Country	Null Hypothesis		F Stat
ASEAN-5	H_0	Tariffs Granger cause Export	3.62* (0.07)
	H_1	Tariffs does not Granger cause export	3.02 (0.17)
Malaysia	H_0	Tariffs Granger cause Export	0.31 (0.58)
	H_1	Tariffs does not Granger cause export	2.17 (0.15)
Indonesia	H_0	Tariffs Granger cause Export	11.9*** (0.00)
	H_1	Tariffs does not Granger cause export	1.60 (0.22)
Thailand	H_0	Tariffs Granger cause export	5.11** (0.03)
	H_1	Tariffs does not Granger cause export	0.19 (0.66)
Philippines	H_0	Tariffs Granger cause Export	0.37 (0.54)
	H_1	Tariffs does not Granger cause export	48.9 (2.0)
Singapore	H_0	Tariffs Granger cause export	2.95 (0.10)
	H_1	Tariffs does not Granger cause export	13.0*** (0.00)

Note:*, ** and *** significant at 10%, 5% and 1% levels, respectively. *Figures in parenthesis are F- statistics. The lag result based on L(2).*

Source: Computed using data from IMF (2014) via E-Views Packages 9.0

We thus ran a two-way OLS regression between tariffs (independent variable) and exports (dependent variable) and found the coefficient of the former to be negative. Clearly then the results show that falling tariffs have Granger caused export growth in Indonesia, Thailand and ASEAN-5 as a whole. The results for the Philippines are not clear, while it shows no causality link with Singapore. The latter is likely to be a consequence of tariffs has fallen before the introduction of AFTA in 1992 in Singapore.

6.5 Period P3

We start the econometric analysis of hypothesis 3 by subjecting the export data of the ASEAN-5 series over the period 1970-2013 (P3). The tests for the tariff data series was already undertaken in chapter four. The tests we carry out here on exports are the Augmented Dicker Fuller (ADF) and the Durbin-Watson tests for stability and serial

correlation. Only once the data series is stationary and free from serial correlation we will 6.2.2 examine the relationship between changes in tariffs and exports using the Granger causality test.

6.5.1. Augmented Dickey Fuller Test

Table 6.7 shows the ADF results for the ASEAN-5 by individual countries, and as a whole. It can be seen that the t-statistics is significant for all the countries to demonstrate that the export data series over the period P3 is stationary.

Table 6.7: ADF test result for ASEAN-5, Export for period P3

Export Data	ADF T-Stat	level 1%	level 5%	level 10%	I(d)
ASEAN-5	(-6.53)***	-4.19	-3.52	-3.19	I(1)
Malaysia	(-6.65)***	-4.19	-3.52	-3.19	I(1)
Indonesia	(-6.40)***	-4.19	-3.52	-3.19	I(1)
Thailand	(-6.56)***	-4.19	-3.52	-3.19	I(1)
Philippines	(-6.41)***	-4.19	-3.52	-3.19	I(1)
Singapore	(-6.71)***	-4.19	-3.52	-3.19	I(1)

Note : *** significant at the 1% level. *Figures in parenthesis are F- statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (1991, 2014) Using E-Views Packages 9.0

6.5.2 Durbin-Watson Test

Table 6.8 presents the Durbin Watson test results for the export series of the ASEAN-5 over the period P3. All the result using the second difference falls in withinH_0, which is in the acceptable zone. Hence, none of the series suffer from autocorrelation.

Table 6 .8: Durbin-Watson test, Export, period P3

Export	H_0	d_l	d_u	DW t	$4-d_u$	$4-d_l$	H_1
ASEAN-5	Accept	1.44	1.54	2.01**	2.46	2.55	Reject
Malaysia	Accept	1.44	1.54	2.01**	2.46	2.55	Reject
Indonesia	Accept	1.44	1.54	2.01**	2.46	2.55	Reject
Thailand	Accept	1.44	1.54	2.01**	2.46	2.55	Reject
Philippines	Accept	1.44	1.54	2.00**	2.46	2.55	Reject
Singapore	Accept	1.44	1.54	2.01**	2.46	2.55	Reject

Note:**, shows significance levels at 5%. *Figures in parenthesis are Durbin-Watson statistics.*

Source: Computed using data from IMF (1991, 2014) Using E-Views Packages 9.0

The ADF and DB test results show that the export data series of the ASEAN-5 is both stable and free from autocorrelation. Hence, we proceed to carry out the Granger causality test to check if there is a relationship between changes in exports and tariffs for the ASEAN-5 over the period P3.

6.5.3 Granger Causality Test

The Granger Causality test was executed for the period P1to P2 for export and MFN value and the result been tabulated in Table 6.4. The results are divided into null hypothesis and alternative hypothesis in order to distinguish the relationship between MFN and export growth. The outcome of the result is mixed and details are elaborated in below Table 6.9.

The results show that tariffs Granger caused export growth in the overall ASEAN-5 over the period P3 (Table 6.4). The results were significant at the 5% level. Among the individual economies the empirical evidence shows that tariffs Granger caused export growth in Indonesia, Malaysia and Thailand and the results are significant at the 1% level for Indonesia and Thailand, and 10% for Malaysia.

Table 6.9: Granger Causality Test, ASEAN-5, Exports and Tariffs, period P3

Country	Hypothesis		F Stat
ASEAN-5	H_0	Tariffs Granger cause export	5.83**(0.02)
	H_1	Tariffs does not Granger cause export	4.4 (0.99)
Malaysia	H_0	Tariffs Granger cause export	3.57* (0.06)
	H_1	Tariffs does not Granger cause export	0.00 (0.95)
Indonesia	H_0	Tariffs Granger cause export	6.28*** (0.01)
	H_1	Tariffs does not Granger cause export	0.01 (0.916)
Thailand	H_0	Tariffs Granger cause export	11.0*** (0.00)
	H_1	Tariffs does not Granger cause export	0.00 (0.96)
Philippines	H_0	Tariffs Granger cause export	0.00 (0.95)
	H_1	Tariffs does not Granger cause export	3.52* (0.06)
Singapore	H_0	Tariffs Granger cause export	.02 (0.87)
	H_1	Tariffs does not Granger cause export	1.11 (0.29)

Note:, ** and *** - Significant at 10%, 5% and1% respectively. Figures in parenthesis are F- statistics. Test result based on lag L(2).*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

In the long run the Granger Causality determines evidence that tariff has relationship for export growth. In terms of causality the result shows lowering tariff rate will provide a positive influence on the level of export, that is, economic growth (GDP) granger causes on tariff, and there is a mutual influence between export and import because of intra-trade and imports of intermediate goods. The Granger Causality test indicates evidence of bidirectional causalities between lowering tariff and export growth at five percent significant level for ASEAN-5. The Granger Causality test shows similar trend for Malaysia, Indonesia and Thailand in the long run with unidirectional causalities at ten percent and one percent respectively. For Philippines, the tariff lowering has inverse relationship on export in long run lowering has no favor in generating export led policy. The is no causalities found for Singapore in the long run where the null hypothesis and alternative found no evidence for the relationship.

6.6 Summary of Granger Causality Results

Overall, it can be seen that the influence of tariff deregulation has been significant in Indonesia, Malaysia and Thailand over the period P3, i.e. 1970-2013. The results were highly significant for Indonesia and Thailand at the 1% level. The same significant relationship was observed for period P2 for Indonesia and Thailand. The results for ASEAN-5 as a whole were significant at the 5 percent level for periods P3 and P2. Malaysia enjoyed a significant same relationship in period P3 but only at the 10% level.

Table 6.10: Overall Result, ASEAN-5, Tariffs and Exports, 1970-2013

Period	P3	P1	P2
Variables	Tariffs/Export	Tariffs/Export	Tariffs/Export
ASEAN-5	H_0**		H_0*
Malaysia	H_0*		
Indonesia	H_0***		H_0***
Thailand	H_0***		H_0**
Philippines	H_1*		
Singapore			H_1**

Note:Significant ***, ** and * significant at the 1%, 5% and 10% level, respectively.
Source: Computed using data from IMF (2014) via E-Views application packages 9.0

6.7 Summary

In summary, the evidence shows that the statistical relationship between tariff reduction and export growth is significant for Indonesia and Thailand, and the ASEAN-5 as a whole over the AFTA (1992-2013) and the longer 1970-2013 periods. However, that relationship was only significant for Malaysia over 1970-2013 at the 10% level. Also, there is no evidence of a relationship between tariffs and exports in the Philippines and Singapore. Trade liberalization does not necessarily imply faster export growth, but in practice the two appear to be highly correlated. The impact of trade liberalization on

economic growth outlined above probably works mainly through improving efficiency and stimulating exports which have powerful effects on both supply and demand within an economy. There are several different measures of trade liberalization or trade orientation, and all studies seem to show a positive effect of liberalization on economic performance. Likewise there are several different studies of the relation between exports and growth and the evidence seems overwhelming that the two are highly correlated in a causal sense, but the relative importance of the precise mechanisms by which export growth impacts on economic growth are not always easy to discern or quantify. While the statistical evidence is robust we did not examine the counterfactual, which is not possible using data. Also, we did not capture in this chapter the influence of other variables on export growth. Nevertheless, the rigorous use of the Granger causality test has helped establish where a significant influence can be found between changes in tariffs and export growth.

CHAPTER 7: TARIFF & IMPORT GROWTH

7.1 Introduction

Imports have a strong bearing on economic growth. Through imports countries enjoy access to materials and intermediate products that they need for processing and assembly, and capital and final goods to support production and consumption. Also, important is the role of imports in the learning process. The evidence from imports of goods and technology on the catch up experience of South Korea and Taiwan is now obvious (Amsden, 1989; Amsden and Chu, 2003). While the use of tariffs to support import-substitution has had a strong influence in the early development of countries, such as South Korea and Taiwan, these countries eventually deregulated tariffs to ensure that their export thrusts into the developed markets were not derailed (Rasiah, 2009). The same can be said of the ASEAN market economies, which began to liberalize tariffs particularly since the introduction of AFTA in 1992.

Hence, we examine in this chapter the influence of changes in tariffs on imports into the pioneering ASEAN-5. The rest of the chapter is organized as follows. Section 7.2 analyzes the growth in imports of the ASEAN-5 over the periods 1970-92and 1992-2013. Section 7.3 examines the impact of changes in tariffs on import growth in the ASEAN-5 economies over the period 1970-2013, 1970-92 and 1992-2013. The interpretation of the null and alternative hypothesis between tariff and import growth been explained this chapter. The hypothesis will explain the relationship between tariff and import growth whether it has unidirectional or bidirectional over the specify period.

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7.2 Econometric Analysis

In this section we attempt to analyze the relationship between changes in tariffs and import growth in the ASEAN-5 over the period 1970-2013. Since we have already tested for stationarity and serial correlation on tariffs in chapter 4, we test only the import data series here. Our focus is on whether the relationship was stronger over the period 1992-2013 compared to 1970-92 before the introduction of AFTA. The following hypothesis will be examined in this section. The econometric analysis of the impact of changes in tariff on import among the ASEAN-5 is carried out stepwise through the Augmented Dicker Fuller (ADF) test, Durbin-Watson (DW) test and eventually the Granger Causality test. The following hypotheses are analyzed in this section:-

H_0: Lowering tariff does Granger cause import growth.

H_1: Lowering tariff Granger does not cause import growth.

This is carried out first by subjecting the FDI and tariff series of the ASEAN-5 to the ADF test for stability and DW test for autocorrelation. It is only after ensuring that both series are stable and not suffering from serial correlation we attempt to test for a causal relationship between changes in tariffs and import growth.

7.3 Period P1

We examine the relationship between changes in tariffs and import growth in the ASEAN-5 over the period 1970-92 (P1) in this section. This is done with a test on the import data series for stationarity (ADF test) and autocorrelation (DW test).

7.3.1 Augmented Dickey Fuller Test

The ADF test statistics show that the t-statistics of all the ASEAN-5 members are significant at the 5% level (Table 7.1). We now proceed to test for serial correlation.

Table 7.1: ADF test result for ASEAN-5, Import for period P1

GDP Data	ADF	level 1%	level 5%	level 10%	I(d)
ASEAN-5	(-4.29)**	-4.49	-3.65	-3.26	I(2)
Malaysia	(-4.35)**	-4.49	-3.65	-3.26	I(2)
Indonesia	(-4.22)**	-4.49	-3.65	-3.26	I(2)
Thailand	(-4.29)**	-4.49	-3.65	-3.26	I(2)
Philippines	(-4.18)**	-4.49	-3.65	-3.26	I(2)
Singapore	(-4.39)**	-4.49	-3.65	-3.26	I(2)

Note : *** significant at the 1% level. *Figures in parenthesis are F- statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (2014), via E-Views Packages 9.0

7.3.2 Durbin-Watson Test

Table 7.2 presents the DW statistics of the ASEAN-5 countries over the period 1970-92 (P1). The results show that the import series of all the countries do not suffer from autocorrelation problems as they are significant at the 1% level.

Table 7.2: Durbin-Watson test, Import, Period P1

Import	H_0	d_l	d_u	DW t	$4-d_u$	$4-d_l$	H_1
ASEAN-5	Reject	0.99	1.17	2.01***	2.83	3.01	Accept
Malaysia	Reject	0.99	1.17	2.01***	2.83	3.01	Accept
Indonesia	Reject	0.99	1.17	2.01***	2.83	3.01	Accept
Thailand	Reject	0.99	1.17	2.01***	2.83	3.01	Accept
Philippines	Reject	0.99	1.17	2.01***	2.83	3.01	Accept
Singapore	Reject	0.99	1.17	2.01***	2.83	3.01	Accept

Note:***, shows significance levels at 1%. Figures in parenthesis are Durbin-Watson statistics value.

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

Given that the import data series of the ASEAN-5 over the period P1 is both stationary and clean of autocorrelation we proceed to analyze the relationship between changes in tariffs and import growth in the next section.

7.3.3 Granger Causality Test

Table 7.3 presents the results of the Granger causality test between changes in tariffs and import growth among the ASEAN-5 over the period P1. The results show that none of them are statistically significant. Hence, there is no evidence that changes in tariffs Granger caused import growth among the ASEAN-5 over the period 1970-92.

Table 7.3: Granger Causality test, ASEAN-5, Tariffs and Import, Period P1

Country	Hypothesis		F Stat
ASEAN-5	H_0	Tariffs Granger cause import	0.00 (0.98)
	H_1	Tariffs does not Granger cause import	0.00 (0.97)
Malaysia	H_0	Tariffs Granger cause import	0.00 (0.93)
	H_1	Tariffs does not Granger cause import	5.6 (0.99)
Indonesia	H_0	Tariffs Granger cause import	0.00 (0.98)
	H_1	Tariffs does not Granger cause import	0.00 (0.98)
Thailand	H_0	Tariffs Granger cause import	1.9 (0.99)
	H_1	Tariffs does not Granger cause import	4.7 (0.99)
Philippines	H_0	Tariffs Granger cause import	0.00 (0.98)
	H_1	Tariffs does not Granger cause import	0.01 (0.90)
Singapore	H_0	Tariffs Granger cause import	1.96 (0.17)
	H_1	Tariffs does not Granger cause import	0.00 (0.95)

Note: No evidence found . *Figures in parenthesis are F- statistics. The lag result based on L(2).*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

Hence, the results show that tariffs had no bearing on import growth among the ASEAN-5 over the period 1970-92 (P1).

7.4 Period P2

In this section we analyze the relationship between changes in tariffs and import growth in the ASEAN-5 over the period 1992-2013 (P2). We undertake the ADF and the DW tests before proceeding to analyze the relationship using the Granger causality test.

7.4.1 Augmented Dickey Fuller Test

The ADF test result shows that the t-statistics is significant at the 1% level (Table 7.4). Hence, the import series over the period 1992-2013 is stable for all the ASEAN-5 countries.

Table 7.4: ADF test result for ASEAN-5, Import for period P2

Import Data	ADF	level 1%	level 5%	level 10%	I(d)
ASEAN-5	(-5.24)***	-4.49	-3.65	3.26	I(1)
Malaysia	(-4.80)***	-4.49	-3.67	3.27	I(1)
Indonesia	(-4.04)**	-4.49	-3.65	3.26	I(2)
Thailand	(-6.28)***	-4.49	-3.65	3.26	I(1)
Philippines	(-4.52)***	-4.49	-3.65	3.26	I(1)
Singapore	(-5.27)***	-4.49	-3.65	3.26	I(1)

Note :*** & ** significant at the 1% & 5% level respective. *Figures in parenthesis are F- statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

7.4.2 Durbin-Watson Test

Table 7.5 presents the DW statistics of the ASEAN-5 countries over the period 1992-2013 (P2). The results show that the import series of all the countries do not suffer from autocorrelation problems as they are significant at the 1% level.

Table 7.5: Durbin-Watson test, Imports, Period P2

Import	H_0	d_l	d_u	DW t	$4-d_u$	$4-d_l$	H_1
ASEAN-5	Accept	0.99	1.17	(2.09)***	2.83	3.01	Reject
Malaysia	Accept	0.99	1.17	(2.14)***	2.83	3.01	Reject
Indonesia	Accept	0.99	1.17	(2.00)***	2.83	3.01	Reject
Thailand	Accept	0.99	1.17	(2.05)***	2.83	3.01	Reject
Philippines	Accept	0.99	1.17	(2.67)***	2.83	3.01	Reject
Singapore	Accept	0.99	1.17	(2.06)***	2.83	3.01	Reject

Note: ***, shows significance levels at 1%. Figures in parenthesis are Durbin-Watson statistics value.

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

Given that the import data series of the ASEAN-5 over the period P2 is both stationary and clean of autocorrelation we proceed to analyze the relationship between changes in tariffs and import growth in the next section.

7.4.3 Granger Causality Test

The Granger Causality test results over the period P2 are tabulated in Table 7.6. The results are based on pair test for import and MFN for each country and aggregated level as shown below. The results show that changes in tariffs did not Granger cause growth in imports in Singapore in period P2 and they are statistically highly significant (at 1%). There is no evidence of such a relationship with the ASEAN-5 as a whole, and Indonesia, Malaysia, the Philippines and Thailand. This suggests that there are other factors more that enjoy a greater impact on imports than tariffs in Indonesia, Malaysia, the Philippines, Thailand and Singapore.

Table 7.6: Granger Causality Test, ASEAN-5, Import and. Total Tariff, Period P2

Country	Null Hypothesis		F Stat
ASEAN-5	H_0	Tariff Granger cause import	3.38 (0.08)
	H_1	Tariff does not Granger cause import	0.00 (0.98)
Malaysia	H_0	Tariff Granger cause import	1.70 (0.20)
	H_1	Tariff does not Granger cause import	0.00 (0.97)
Indonesia	H_0	Tariff Granger cause import	1.47 (0.24)
	H_1	Tariff does not Granger cause import	0.14 (0.70)
Thailand	H_0	Tariff Granger cause import	0.97 (0.34)
	H_1	Tariff does not Granger cause import	0.11 (0.74)
Philippines	H_0	Tariff Granger cause import	0.11 (0.74)
	H_1	Tariff does not Granger cause import	0.51 (0.48)
Singapore	H_0	Tariff Granger cause import	3.09 (0.19)
	H_1	Tariff does not Granger cause import	10.7*** (0.00)

Note: *** significant at the 1% level. *Figures in parenthesis are F- statistics. The lag result based on L (2).*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

Quite clearly tariff deregulation than there was no robust relationship between changes in tariffs and import growth in any of the ASEAN-5 members. Hence, liberalization has not impacted in any way in surging imports in these countries. All the ASEAN-5 countries have not shown any significant impact base on the test result. Therefore we can reject the null hypotheses 2 for the period P2. Base on the above finding, it very clears evidence that tariff and import has no relationship.

7.5 Period P3

In this section we analyze the relationship between changes in tariffs and import growth in the ASEAN-5 over the period 1970-2013. We undertake the ADF and the DW tests before proceeding to analyze the relationship using the Granger causality test.

7.5.1 Augmented Dickey Fuller Test

The ADF test result shows that the t-statistics is significant at the 1% level (Table 7.7). Hence, the import series over the period 1970-2013 is stable for all the ASEAN-5 countries.

Table 7.7: ADF test, ASEAN-5, Imports, period P3

Import Data	ADF	level 1%	level 5%	level 10%	*I* (*d*)
ASEAN-5	-6.41***	-4.19	-3.52	-3.19	I (1)
Malaysia	-6.60***	-4.19	-3.52	-3.19	*I* (*1*)
Indonesia	-6.36***	-4.19	-3.52	-3.19	I (1)
Thailand	-6.50***	-4.19	-3.52	-3.19	*I* (*1*)
Philippines	-6.34***	-4.19	-3.52	-3.19	I (1)
Singapore	-6.65***	-4.19	-3.52	-3.19	*I* (*1*)

Note : *** significant at the 1% level. *Figures in parenthesis are F- statistics. I(d) level of differentiation.*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

7.5.2 Durbin-Watson Test

The auto correlation test is applied here using Durbin-Watson statistics on imports. The results are presented in Table 7.8. The results show that the import data series for all the ASEAN-5 are not plagued by serial correlation.

Table 7.8: Durbin-Watson test, Imports, period P3

Import Data	H_0	d_l	d_u	DW t	$4-d_u$	$4-d_l$	H_1
ASEAN-5	Accept	1.44	1.54	(2.00)***	2.46	2.55	Reject
Malaysia	Accept	1.44	1.54	(2.01)***	2.46	2.55	Reject
Indonesia	Accept	1.44	1.54	(2.00)***	2.46	2.55	Reject
Thailand	Accept	1.44	1.54	(2.01)***	2.46	2.55	Reject
Philippines	Accept	1.44	1.54	(2.00)***	2.46	2.55	Reject
Singapore	Accept	1.44	1.54	(2.01)***	2.46	2.55	Reject

Note:**, shows significance levels at 5%. Figures in parenthesis are Durbin-Watson statistics value.

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

Given that the import data series of the ASEAN-5 over the period P3 is both stationary and clean of autocorrelation, we proceed to deploy the Granger causality test in the next section to analyze the relationship between changes in tariffs and imports.

7.5.3 Granger Causality test

Table 7.9 presents the results of the Granger Causality test between tariffs and imports over the period P3. The results show that there is no evidence change in tariffs having a statistically significant impact on imports in the ASEAN-5 as a whole, and Malaysia and Singapore. Changes in tariffs have significant impact on imports in Indonesia, the Philippines and Thailand over the period 1970-2013 (P3).

Table 7.9: Granger Causality test, ASEAN-5, Tariffs and Import, period P3

Country	Hypothesis		F Stat
ASEAN-5	H_0	Tariffs Granger cause import	0.88 (0.35)
	H_1	Tariffs does not Granger cause import	0.00 (0.95)
Malaysia	H_0	Tariffs Granger cause import	0.00 (0.98)
	H_1	Tariffs does not Granger cause import	0.00 (0.98)
Indonesia	H_0	Tariffs Granger cause import	6.74*** (0.01)
	H_1	Tariffs does not Granger cause import	0.01 (0.89)
Thailand	H_0	Tariffs Granger cause import	12.5*** (0.00)
	H_1	Tariffs does not Granger cause import	8.9 (0.99)
Philippines	H_0	Tariffs Granger cause import	3.78** (0.05)
	H_1	Tariffs does not Granger cause import	0.00 (0.92)
Singapore	H_0	Tariffs Granger cause import	1.08 (0.30)
	H_1	Tariffs does not Granger cause import	0.01 (0.89)

Note: *** and ** - statistically significant at the 1% and 5% , respectively. *Figures in parenthesis are F- statistics. The lag result based on L(2).*

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

The results are highly significant at the 1% level for Indonesia and Thailand, and at the 5% level for the Philippines. Hence, changes in tariffs Granger caused imports in

Indonesia, the Philippines and Thailand over the period P3. Based on the analysis over the longer period 1970-2013 there is robust evidence that changes in tariffs Granger caused import growth in Indonesia, the Philippines and Thailand. An OLS regression between tariffs as the independent and import growth as the dependent variable was run. The negative sign of the coefficient of tariffs show that falling tariffs have stimulated import growth in these countries.

7.6 Summary of Granger Causality Results

Table 7.10 presents the overall results Granger Causality results. It can be seen that changes in tariffs has had a statistically significant impact only in Indonesia, the Philippines and Thailand. The coefficients from the OLS regressions confirm that falling tariffs has led to a rise in imports in these countries over the period 1970-2013 (P3). However, the results also show that the AFTA process has aggravated import growth in the ASEAN-5 as none of the countries showed changes in tariffs to Granger cause import growth. Singapore showed a statistically highly significant result to show that changes in tariffs did not cause import growth. The latter could be a consequence of the country having deregulated systematically before the introduction of AFTA in 1992.

Table 7.10: Granger Causality Test, ASEAN-5, Tariffs and Imports, all periods

Period	P1	P2	P3
ASEAN-5			
Malaysia			
Indonesia			H_0***
Thailand			H_0***
Philippines			H_0**
Singapore		H_1***	

Note:*** and ** refer to statistical significance at 1% and 5% respectively

Source: Computed using data from IMF (2014) via E-Views application packages 9.0

Overall it can be seen that tariff deregulation has only led to import growth over the period 1970-2013 in Indonesia, the Philippines and Thailand. The CEPT mechanism under AFTA did not significantly affect import growth in any of the ASEAN-5 countries.

7.7 Summary

This chapter focused on analyzing the relationship between changes in tariffs and import growth in the ASEAN-5 over the periods of 1970-92, 1992-2013, and 1970-2013. The use of the most robust model to analyze causality, i.e. the Granger causality test, showed that tariffs have played no role in Singapore's import growth over all three periods. There is also no statistical evidence of such a relationship in Malaysia in all three periods. The results show that tariff deregulation has impacted strongly on import growth in Indonesia, the Philippines and Thailand but only in the period 1970-2013.

While it may be necessary for policy makers in Indonesia, the Philippines and Thailand to be concerned over the impact of tariff deregulation on import growth, it will be important to see if this is pertinent to sustain the learning process before domestic production can compete with imports. Nevertheless, there is no evidence of such a relationship following the introduction of AFTA in 1992. Changes in tariffs have certainly not impacted on import growth in Singapore. The latter is likely to be a consequence of both systematic deregulation by 1992, and the rising competitiveness of domestic production to compete with imports. To some extent Malaysia is in a better state than Indonesia, the Philippines and Thailand as there is no evidence of changes in tariffs having driven import growth.

CHAPTER 8: CONCLUSIONS

8.1 Introduction

Having analyzed the impact of tariff liberalization statistically over the period 1970-2013, and before and after the implementation of AFTA in 1992 among five pioneering ASEAN economies using the most robust econometric technique to date, i.e. the Granger causality test, we seek to examine the contributions of the thesis for theory and policy in this chapter. In doing so it attempts to plug some of the holes in the existing literature detailing the quantitative impact of AFTA in particular, and tariff deregulation in general on the ASEAN-5.The rest of the chapter is organized as follows. The next section presents the synthesis of findings followed by implications for theory. The subsequent section draws implications for policy. The final section focuses on the limitations of the study and suggests some directions for future research.

8.2 Synthesis of Findings

While all the five ASEAN market economies have performed reasonably well as GDP growth rates of Indonesia, Malaysia, the Philippines, Singapore and Thailand have hovered on average above 4 percent over the period 1970-2013 with Singapore recording the highest growth rates to become developed by the 1980s, the impact of tariff liberalization on economic growth has gradually fallen particularly since 1992. Part of the reason is because of the dramatic fall in tariffs even before AFTA was introduced in 1992. Especially Singapore had already lowered its tariffs to less than 5% by the late 1980s. Some economies also faced the substitution of quantitative restrictions with non-tariff barriers following the introduction of AFTA (Mahani, Z.A 2002).

All five economies experienced a trend decline in tariffs under the MFN, as well as, the CEPT frameworks. The findings show that the ASEAN-5 has benefited for both policy trade protection and tariff deregulation. Singapore's GDP grew the most in both the periods of 1970-92 (8.5% on average per annum) and 1992-2013 (5.9% on average per annum).

With the exception of the Philippines, net FDI inflows grew rapidly in the remaining four economies. Malaysia enjoyed the highest annual average net FDI inflows in 1970-92 (39.6%) followed by Thailand (38.5%), Singapore (30.2%), and Indonesia (24.5%). The Philippines alone recorded a decline on average at -3.4% per annum. Singapore (32.4%) and Indonesia (20.3%) enjoyed the highest annual average growth in net FDI inflows in 1992-2013. All five ASEAN-5 members enjoyed positive growth in net FDI inflows in this period. Exports and imports of all ASEAN-5 grew rapidly in both 1970-92 and 1992-2013. Thailand enjoyed the highest annual average growth in exports in 1970-92 (15.9%) and 1992-2013 (9.2%). Thailand also recorded the highest annual average growth in imports in 1970-92 (15.3%) and 1992-2013 (28.4%).

8.2.1 Granger Causality Test

We discuss the results of the Granger causality test to establish if there was a relationship between changes in tariffs, and GDP, net FDI inflows, exports and imports in this section. Since the Granger causality test is considered the only reliable measure establishing causality the findings will be important to identify the impact of tariffs on growth.

8.2.1.1 Changes in Tariffs and GDP

Except for Singapore the remaining countries' results did not show a significant relationship between tariff liberalization and GDP growth in all the periods. The relationship in Singapore was significant in the period P2. The results are robust as all the data passed the stationarity and autocorrelation tests. The significant impact of tariff liberalization on GDP growth in Singapore in 1992-2013 is likely to have been caused by liberalization faced by other economies as Singapore had already liberalized its tariffs before AFTA was introduced. Hence, it can be said developments in the rest of the other countries do influence what happens to the economy of particular country. While that is the case it has also to be established that the counterfactual has not been tested as the introduction of the World Trade Organization (WTO) in 1995 had already made tariff liberalization mandatory for all members.

8.2.1.2 Changes in Tariffs and Net FDI Inflows

The general argument that the liberalization of tariffs will foster more net FDI inflows is not supported at all by the evidence from Malaysia, the Philippines and Singapore. Indonesia and Thailand showed that tariff liberalization Granger caused net FDI inflows in the long period of 1970-2013. In fact, all the ASEAN-5 countries experienced a significant fall in tariffs and changes in government policies to attract FDI inflows since the 1980s and 1990s (see Rasiah, 2009).However, there was no evidence that changes in tariffs influenced growth in net FDI inflows in the periods before and following the introduction of AFTA in 1992. One could argue that efforts to open of their economies may not be as significant as the transition economies since the 190s. Nevertheless, the importance of FDI in all the five market economies cannot be dismissed as the export-oriented industries of clothing and electronics were largely driven by foreign capital

(Rasiah, 2009), which may mean that other factors rather than tariffs may have been significant.

8.2.1.3 Changes in Tariffs and Exports

The evidence shows that the statistical relationship between tariff reduction and export growth is significant for Indonesia and Thailand, and the ASEAN-5 as a whole over the 1992-2013 and 1970-2013 periods. Interestingly, the CEPT mechanism from the AFTA process appears important in driving exports in Indonesia and Thailand. That relationship was only significant for Malaysia over 1970-2013 at the 10% level. Also, there was no statistical evidence of a relationship between tariffs and exports in the Philippines and Singapore. While the statistical evidence is robust we did not examine the counterfactual, which is not possible using data. Also, we did not capture in this chapter the influence of other variables on export growth.

8.2.1.4 Changes in Tariffs and Imports

There is no statistical evidence of a relationship between changes in tariffs and import growth among the ASEAN-5. Tariffs have had no bearing on imports to Singapore, while there is no evidence of such a relationship in Malaysia in all three periods. The results show that tariff deregulation has impacted strongly on import growth in Indonesia, the Philippines and Thailand in the period 1970-2013. While it may be necessary for policy makers in Indonesia, the Philippines and Thailand to be concerned over the impact of tariff deregulation on import growth, such a sudden surge in imports could be a consequence of deregulation targeted at attracting FDI into the previously protected sector of automobile assembly and automotive components. Nevertheless, if this is true firms in both countries can actually seek this learning route to transfer

technology. Nevertheless, there is no evidence of such a relationship following the introduction of AFTA in 1992 in all the ASEAN-5.

8.3 Implications for Theory

Mainstream economic theory posits that the elimination of tariffs or its reduction to low levels will stimulate economic growth through the role of factor endowments that determine resource allocation (Bhagwati, 1975). While politics cannot be removed from contestations to liberalize as countries seek to open markets for the products and services of their national firms, the major economic argument calling for deregulation is to increase the role of markets and to establish the so-called fair economic order(Krueger, 1980). The ASEAN-5 were already among the economies with the lowest average tariffs in the world before the introduction of AFTA in 1992. Tariffs further fell to make them among the economic regimes with the lowest tariffs (see Table 8.1).

Table 8:1: Import Tariffs into Block and to Rest of the World, 2000-2007

Region	Bloc		Rest of the world	
Trade Groups	2000-04	2000-07	2000-04	2006-07
ASEAN	6.17	4.5	4.31	2.96
SAARC	18.22	13.02	8.62	4.07
MERCOSUR	12.61	8.15	9.04	3.41
EU-25	4.16	3.91	5.55	3.45
NAFTA	8.25	6.22	2.28	1.14

Source: World Trade Indicators, World Bank, 2008

While the experience of Singapore in the period 1992-2013 supports mainstream theory the impact can only be the case with tariff deregulation experienced outside the country as Singapore had already deregulated its tariffs before 1992. On a more significant note, the evidence from Indonesia, Malaysia, the Philippines and Thailand does not suggest that tariff deregulation will stimulate GDP growth. While it is true that we did not

examine the counterfactual and if deregulation is only a necessary condition, the robust results does raise a question mark over the impact of tariff regulation by itself on GDP growth.

The influence of tariff reduction was significant in stimulating net FDI inflows to Indonesia and Thailand over the period 1970-2013. However, not only was there no evidence of the existence of such a relationship for Malaysia, the Philippines and Singapore over all the periods, they were also not available for Indonesia and Thailand over the shorter periods of 1970-1992 and 1992-2013. Clearly then, this support the arguments of Bhagwati (1975) tariff deregulation alone is not sufficient to attract FDI inflows into particular countries. One could argue instead that countries that do not develop national capabilities are likely to lose in the process of liberalization (Lall, 2000; Rasiah, 1995). The successful technological catch up experience of South Korea and Taiwan shows that tariff deregulation that accompanies technological accumulation may be the recipe for economic success (Amsden, 1991; Wade, 1990).

Mainstream economic theory posits that tariff deregulation would stimulate export growth (Krueger, 1980). In addition, Adams and Park (1995) used a general equilibrium model to argue that ASEAN would be better off integrating through the AFTA process to expand trade volume. The evidence from Indonesia and Thailand, and ASEAN-5 as a whole supports such an observation. The argument was also substantiated from the experience of Malaysia over the period 1970-2013. However, the results from the Philippines and Singapore do not support this argument. This opposite argument instead supports the findings of Sharma and Chua (2000) who estimated a gravity model for each one of the ASEAN-5 nations using data from 1980 to 1995 to conclude that the intra-ASEAN trade did not increase from the deregulation process. Nevertheless, their

evidence showed that trade between the ASEAN-5 and the wider Asia Pacific Economic Cooperation (APEC) group increased.

Elliot and Ikemoto (2004) used a gravity equation to evaluate intra- and extra-regional ASEAN bilateral trade flows bias during the period 1982 to 1999, and concluded that trade flows were not significantly affected in the years immediately after the implementation of the AFTA. These findings were true particularly for countries like Thailand, Singapore and Indonesia but not for the Philippines. We regard our findings to be more robust than these findings as the series we have used is much longer than theirs. Nevertheless, while the evidence does not support a significant impact of tariff reduction on exports in Indonesia, Malaysia 1970-2013, and Thailand suggesting that there are other factors, such as resource endowments, government policy (including emphasis on human capital development) that are more important than tariffs in stimulating export growth in the Philippines and Singapore (see Lucas, 1988; Vogel, 1991; Perkins, 2006). Also, the evidence also shows that tariff deregulation has been important in stimulating export growth in Indonesia, Malaysia and Thailand throughout the longer 1970-2013 period rather than just the 1992-2013. This obviously means that AFTA in itself may not have been the dominant influence on export growth in these countries.

Importantly, the economic argument on tariff deregulation, on the one hand, points to export expansion, on the other hand it points that imports will also increase (Krueger, 1980). Such flows of trade are supposedly based on comparative advantage. That is, the ASEAN-5 will export goods in which they enjoy comparative and import goods in which they enjoy comparative disadvantage. On this note, there is no evidence of a significant impact of tariff deregulation on import growth in Singapore and Malaysia.

While Singapore had already deregulated systematically by the time AFTA was introduced in 1992. Malaysia too did not show a statistically significant impact of changes in tariffs on imports. The is no evidence to determine the relationship between import growth and lowering tariff in Malaysia for long and short run. The import growth in Malaysia derives by export growth for intermediate import goods.

Tariff deregulation had a significant impact on import growth in Indonesia, the Philippines and Thailand. However, such an impact is not confined to just the AFTA period as the results over the 1970-92 and 1992-2013 periods were not significant. In other words, the AFTA process has merely augmented the overall tariff deregulation tend pursuit by these countries since 1970.

8.4 Implications for Policy

Economic growth and tariff reduction are integrated of order one for the five ASEAN countries, namely Indonesia, Malaysia, Philippines, Singapore and Thailand, at the individual level and group level. Having drawn implications for theory, we drawn implications for policy in this section. The discussion follows the implications of the empirical findings for each country's national policy.

8.4.1 Malaysia

After serious setbacks in export revenues caused by heavy dependence on primary exports in the late 1970s and early 1980s a consequence of sharply falling commodity prices, Jomo,K.S.(1990), Malaysia undertook some major reforms in trade and industrial policies, which included the devaluation of the Ringgit and the resumption of financial incentives for foreign firms in 1986 (Rasiah, 1995). These reforms led to impressive gains in manufactured exports while at the same time maintaining its

primary exports. The Plaza Accord of 1985 and the withdrawal of the Generalized System of Preferences from the Newly Industrialize Asian Economies in 1988 drove massive inflows of FDI into Malaysia (Rasiah, 1988).Tariff reforms from the 1990s helped to ensure that an overall favorable environment was in place to support the export drive. Malaysia achieved a considerable degree of openness, with low import duties on manufactured goods. However, despite the deregulation in tariffs, the CEPT had no impact on Malaysia's GDP, net FDI inflows and Import growth. Exports grew through from a deregulation in tariffs, which is largely a consequence of access to China and the other ASEAN economies.

It is important to note three major developments that explain why tariff deregulation did not have a direct impact on growth in GDP, net FDI inflows and imports. Firstly, Malaysia was undergoing structural change with unemployment levels falling below 3% since the 1990s rising, which pushed up labour costs. Instead of stimulating technical change, the government encouraged the easy route to importing low skilled labour. Secondly, the large inflows of FDI in the late 1980s and early 1990s raised exchange rates that discouraged exports and encouraged imports at the expense of chronic balance of payments deficits by the time the Asian financial crisis struck in 1997. Thirdly, government policies did not let merit as the basis for hiring personnel and rewarding performing firms. Hence, regardless of ethnicity firms enjoying rents did not spearhead the rapid technological catch up a la South Korea and Taiwan. The Malaysian experience shows that there is no substitute for human capital development and government initiatives to support structural change from low to high value added activities (Rasiah, 2011). Tariff deregulation can act as a spur but it is not enough to drive a sea transformation of an economy towards high value added activities.

8.4.2 Indonesia

Indonesia suffered from large current account deficits in the early 1980s due to falling prices of oil exports (Hill and Shiraishi, 2007). This situation led to an overall reform and adjustment process, which included a reform of the tariff in 1985 and 1986. From an average tariff of 32 percent at the start of the program, it dropped to 27 per- cent by 1986 and dropped further to 20 percent in 1993. However, the dispersion remained high with a standard deviation of 17percent from the average tariff. The tariff system was rationalized further: peak rates were dismantled resulting in a new tariff range of 0 to 30 percent. In May 1995, tariffs on 6,030 were reduced, bringing the average tariff down to 15 percent. For the first time, a schedule of time bound tariff reductions was announced. Tariff deregulation did not directly impact Indonesia's GDP growth as the results were not statistically significant. While it can be argued that the deregulation, especially since 1992, is important the evidence shows that GDP growth in Indonesia has benefited more from other factors rather than tariffs. Nevertheless, tariff deregulation has had a direct impact on net FDI inflows into Indonesia over the 1979-2013 periods. The Indonesian economy began to benefit in the long run from tariff deregulation. In a short the growth in export has encourage the CEPT tariff rate reduction which contributed significantly to growth in exports and imports since 1992. Hence, the AFTA deregulation process impacted strongly in the growth of exports and imports in Indonesia.

8.4.3 Thailand

Tariffs have played a major role in Thailand since revenues from tariff duties have accounted for about one-fourth of overall tax revenues collected by the government (Shigeki.H 1995). In fact, due to fiscal imbalances, tariffs were raised in 1985. A comparison of average tariffs in 1978 and 1984 showed that average tariffs in Thailand

increased from 29.4 to 30.6 percent, second only to Indonesia. By 1987 the un-weighted average tariff was only slightly lower than in 1983 and the dispersion in tariffs increased (Dean et al. 1994). The budget surplus from 1988 onwards gave the government greater flexibility in pursuing trade liberalization through substantial tariff reform. The tariff rate reduction for Thailand was slow progress compare to other countries in ASEAN-5.

Tariffs had been identified as the main barrier to imports in Thailand. A Tariff Rate Restructuring Scheme was first introduced in 1990, reducing tariff rates on a product-by-product basis at the same time simplifying the tariff nomenclature. The second part of the program was announced at the end of 1994 as part of Thailand's commitment in the Uruguay Round and AFTA. The reductions are more broad-based and will result in reduction of tariffs for more than 90 percent of all tariff lines;

i. Phasing down of tariffs on 3,900 items, bringing down the average tariff to 27.24 in 1994 and 17.01 in 1997; and

ii. A reduction in the number of tariff levels from 39 to 6, with peak tariff at 30 percent.

Some exceptions still remain, namely, motor vehicles and parts thereof which remain at 60 percent and alcoholic products and tobacco at 60 percent. A number of tariff lines still impose specific or compound tariff duties, a reversal of previous policy which removed these types of rates in Thailand. Another feature of Thailand's tariff system is the wide dispersion of its tariff rates, resulting in high effective protection for a wide array of manufacturing subsectors such as agro processing products, food products, leather products, chemicals, textiles and motor vehicles. Implementation of tariff policy is sometimes inconsistent and discretionary.

The impact of tariff deregulation on Thailand’s economy is significant in net FDI inflows, exports and imports, but not in GDP growth. Indeed, *inter alia*, the reductions

in tariffs were important in attracting giant automobile firms to turn Thailand into ASEAN's automobile capital (Rasiah, 2009). Government policy should now focus on stimulating structural change from low to high value added activities if the country is to avert being lodged into the middle income trap.

8.4.4 The Philippines

Over the period 1999-2014, the Philippines' trade policy has gone significant changes resulting in a steady decline in the level of tariffs. The first broad-based tariff reforms began in the early 1980s as part of a broad industrial restructuring program. The level of average tariffs was brought down from 42.0% to 34.6%. The next round of tariff reforms took effect in 1991, consisting of a five-year program of tariff reduction with gradual and substantial reductions in the number of tariffs still remaining at 40 percent and 50 percent. The aim was to reduce the number of tariff lines to only four, i.e. 3%, 10%, 20% and 30%, with limited exceptions for sensitive agricultural products and selected industrial products which remained as high as 50% (Philippine Tariff commission, 2007).Hence, although Philippines managed to reduce average tariffs to below 5% by 2013, some tariffs have remained higher than this rate.

As a result of the program, average tariffs fell from 27.6 percent in 1985 and to fall to 16 percent in 1995. Before the end of the five-year period, subsequent changes in the tariff schedule reduced the tariff levels even further with the passage of E.O. 189, which immediately cut down tariff duties on capital equipment and spare parts for machinery to 10% and 3%, respectively (Philippine Tariff commission, 2007). This was followed by E.O. 264 and E.O. 288, which again reduced the duty on industrial products and agricultural products, respectively (Philippine Tariff commission, 2007).This new multiyear program will bring 767% of all tariff lines to 0-10% by 2015, after which only

two levels will apply, i.e. 3%on raw materials and 5% for finished products by the year 2015.

The deregulation in tariffs in the Philippines has not impacted significantly on GDP, net FDI inflows and export in the Philippines. While one may argue that the irregular deregulation trends may not have helped, it must also be said that the lack of statistical evidence also shows that there are more dynamic forces at work that impact on GDP, net FDI inflows and exports. Tariff deregulation shows a statistical significant relationship only in imports. Unless the broader measures to develop the productive forces to stimulate structural change from low to high value added activities increased imports is only likely to exacerbate balance of payments of problems in the country.

8.4.5 Singapore

Tariff deregulation shows a statistically significant impact on Singapore in the 1992-2013 periods. Since the country had already largely deregulated tariffs by 1992, this impact is likely to be a consequence of deregulation in the other countries. However, the remaining results were not significant to show a positive impact on the economy. For example, while Singapore has become a developed country in one generation with a per capita income over five times that of Malaysia in 2014, Singapore involvement in the AFT process does not show that it is the biggest beneficiary of the process. Also, while Singapore has directly benefited from its role as an entrepreneurs centre in ASEAN, tariff deregulation has not shown a significant impact on FDI inflows, exports and imports. This could be a consequence of systematic deregulation carried out by the government by 1992.

Singapore also presents a solid case of a country where the government has played a strong role to develop its productive forces by focusing on human capital development,

infrastructure and high technology. Indeed, the country's capacity to stimulate structural transformation from low to high value added activities rather than tariff deregulation has been the prime driver of GDP, net FDI inflow, exports and imports.

Taken together, the results from a profound analysis of the ASEAN-5 shows that the reduction of tariffs may stimulate growth in GDP, FDI inflows, exports and imports. However, tariff deregulation is not a panacea for success as the evidence is not conclusive. Indeed, Rodrik (1992b) discussed lucidly the limitations of trade policy reforms. Clearly, other factors, such as resource endowments and government policies are no less important.

8.5 Future research

The results from this study should be treated with caution as it only considers the ASEAN-5, which had already begun deregulating from the 1970s, and they were fortunate to open up their economies before China and the other transition economies integrated with the world economy. Indeed, an analysis of the CMLV countries may be more conclusive. We could not do that because their time series data is too short to enable the application of the Granger causality test. Nevertheless, the experience of the ASEAN-5 can be used as some among several examples to revisit economy theory on tariff deregulation and liberalization. This all the more so as they are among the most open economies in the world.

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