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ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

ASEAN-India Trade: An Assessment of the Free Trade Agreement, Intra-
Industry Trade and Non-Tariff Measures

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A Dissertation Submitted in Partial Fulfillment of the Requirements
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อนุพามา เทวัญรากุมาร์ มาชาติ : การค้าระหว่างประเทศกลุ่มอาเซียนกับอินเดีย : การประเมินความตกลงการค้าเสรี การค้าระหว่างอุตสาหกรรม และมาตรการกีดกันทางการค้าที่มีใช้ภายใต้ศุลกากร (ASEAN-India Trade: An Assessment of the Free Trade Agreement, Intra-Industry Trade and Non-Tariff Measures) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: ศ. ดร. สุทธิพันธ์ จิราธิวัฒน์, อ.ที่ปรึกษาวิทยานิพนธ์ร่วม: ผศ. ดร. ปิติ ศรีแสงนาม, หน้า.

วิทยานิพนธ์ฉบับนี้วิเคราะห์แง่มุมอันแตกต่างกัน 3 แง่ในบูรณาการทางเศรษฐกิจระดับภูมิภาคระหว่างอาเซียนกับอินเดีย 1. ผลกระทบจากความตกลงการค้าเสรีอาเซียน-อินเดีย (AFTA) ในภาคส่วนการค้าของอินเดียที่เลือกมาศึกษา ด้วยการประเมินเชิงประจักษ์ซึ่งใช้โมเดลของลอยด์และแมคเคลเรน (2004) ฉบับปรับปรุง 2. การประเมินรูปแบบและปัจจัยของการค้าระหว่างอุตสาหกรรม (ITT) อินเดีย ในการผลิตกับประเทศเศรษฐกิจหลักของอาเซียน 6 ประเทศ ได้แก่ อินโดนีเซีย มาเลเซีย ฟิลิปปินส์ สิงคโปร์ ไทย และเวียดนาม รูปแบบดังกล่าวระบุจากการสร้างดัชนีกรูเบล ลอยด์ (GLI) ที่ระดับ 3 หลัก ปัจจัยต่างๆ ได้มาโดยใช้โมเดลถดถอยกำลังสองน้อยที่สุดแบบน้อยทั่วไป (GLS) ของอิทธิพลสุ่ม โดยวิเคราะห์แบบทวิภาคีระหว่างประเทศอาเซียนทั้ง 6 ประเทศ และแต่ละคู่วิเคราะห์แยกกัน 3. การประมาณอัตราภาษี (TE) ที่แปลงมาจากมาตรการที่มีใช้ภายใต้ (NTM) ในภาคส่วนหลักการนำเข้าของอินเดียจากประเทศเศรษฐกิจอาเซียนทั้ง 6 ประเทศนั้น อัตรานี้ประมาณด้วยความแตกต่างของราคาเชิงสัมพัทธ์โดยประเมินลักษณะจากแหล่งข้อมูลทุติยภูมิ ในบริบทดังกล่าว วิทยานิพนธ์ฉบับนี้ตรวจสอบว่าแผนการค้าเสรีระหว่างอาเซียนกับอินเดียนำมาซึ่งได้เพียงใด ประกอบการมองลักษณะจำเพาะของประเทศทั้งอินเดียและประเทศสมาชิกอาเซียน

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จากการค้นพบดังกล่าว สรุปได้ว่า (1) กระบวนการบูรณาการทางเศรษฐกิจอาเซียน-อินเดียมิได้ออกแบบให้สอดคล้องกับลักษณะจำเพาะประเทศของอินเดียนับกับประเทศเศรษฐกิจอาเซียน (2) นโยบายต่างๆ นั้นไม่ครบถ้วนและไม่เฉพาะเจาะจงในประเด็น NTM (3) กระบวนการบูรณาการทางเศรษฐกิจนั้น ควรเข้าถึงอย่างเป็นระบบ มิใช่แบบแบ่งแยกแล้วแต่กรณีไป

สาขาวิชา เศรษฐศาสตร์

ปีการศึกษา 2558

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ANUPAMA DEVENDRAKUMAR MASALI: ASEAN-India Trade: An Assessment of the Free Trade Agreement, Intra-Industry Trade and Non-Tariff Measures. ADVISOR: PROF. SUTHIPHAND CHIRATHIVAT, Ph.D., CO-ADVISOR: ASST. PROF. PITI SRISANGNAM, Ph.D., pp.

This thesis, analyzes three different aspects of ASEAN-India regional economic integration. One, impact of the ASEAN-India Free Trade Agreement (AIFTA) in selected Indian trade sectors. The empirical assessment adopts an adapted version of the Lloyd and McLaren (2004) model. Two, assessment of the patterns and determinants of India's intra-industry trade (IIT) in manufactures with six major ASEAN economies, they are, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. The patterns are identified by constructing Grubel Lloyd Index (GLI) at 3-digit level. The determinants are obtained using Random-Effects Generalized Least Squares (GLS) regression model. The analysis is done bilaterally between six ASEAN countries, and each country pair treated separately. Three, estimation of tariff equivalent (TE) of non-tariff measures (NTMs) on leading sectors of Indian imports from the six ASEAN economies. The TE of NTMs is estimated using relative prices differences. Their nature is assessed using secondary sources. In this context, this thesis examines how well tailored is the ASEAN-India Free Trade Agenda, while keeping in perspective the country specific characteristics of India and ASEAN member countries.

The major findings are as follow. Firstly, the ex-post impact of the FTA shows (a) change in trade volume is negative; (b) change in terms of trade is positive; (c) combined welfare effects are indecisive. The ex-ante projection of negative impact (a) holds true in case of plantation commodities such as black tea, pepper and palm oil while (b) holds false in case of coffee. Secondly, (a) there are no set patterns in India's IIT in manufactures with individual ASEAN countries; (b) there are significant variations in the observed patterns and determinants of India's bilateral IIT with the six ASEAN economies and they vary among the four product groups. Thirdly (a) the TEs of NTMs differ among the ASEAN economies and the sectors under consideration indicating varying motives behind imposition of NTMs by India; (b) in consistence with the general trend, NTMs account for a major portion of bilateral trade costs; (c) with the economic growth and rising incomes the ASEAN and India do use and deal with the challenges of SPS/TBT measures; (d) at the policy level and among business groups NTM related concerns are on rise; (e) India and ASEAN, following the trend elsewhere, have used NTMs to cover from economic downturn, mutually affecting each other.

Based on the findings, it can be concluded that (i) ASEAN-India economic integration process is not tailored in coherence with the country-specific characteristics of India and ASEAN economies. (ii) the policies are partial and indefinite on addressing NTMs; (iii) the process of economic integration should be approached systemically and not compartmentally.

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Student's Signature

Advisor's Signature

Co-Advisor's Signature

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Abbreviations

ASEAN – Association of South-East Asian Nations
 ARIC – Asia Regional Integration Center
 ADB – Asian Development Bank
 UNCTAD – United Nations Conference on Trade and Development
 GVCs – Global Value Chains
 NTMs – Non-Tariff Measures
 IIT – Intra-Industry Trade
 CEPAs – Comprehensive Economic Partnership Agreements
 EMEs – Emerging Market Economies
 MPAC – Master Plan on ASEAN Connectivity
 IPNs – International Production Networks
 TII – Trade Intensity Index
 CAGR – Compound Annual Growth Rates
 MIDA – Malaysian Investment Development Authority
 GLS – Generalized Least Squares
 GLI – Grubel Lloyd Index
 SITC – Standard International Trade Classification
 HS – Harmonized System
 OECD – Organization for Economic Co-Operation and Development
 UNIDO – United Nations Industrial Development Organization
 WTR – World Trade Report
 CTCs – Comprehensive Trade Costs
 TRAINS – Trade Analysis Information System
 USITC – *United States International Trade Commission*
 EIU – Economist Intelligence Unit
 GTAP – Global Trade Analysis Project
 CGE – Computable General Equilibrium
 APTIAD – Asia-Pacific Trade and Investment Agreement
 BOI – Board of Investment
 SPS – Sanitary and Phyto-Sanitary
 TBT – Technical Barriers to Trade
 MRAs – Mutual Recognition Agreements
 COMESA-EAC-SADC – The Common Market for Eastern and Southern Africa -
 East African Community – Southern African Development Authority
 TE – Tariff Equivalent
 FICCI – The Federation of Indian Chambers of Commerce and Industry
 RTAs – Regional Trade Agreements
 AHS – Effectively Applied Tariffs
 WITS – World Integration Trade Solutions
 CLMV – Cambodia, Laos, Myanmar and Vietnam
 WTO-IDB – World Trade Organization-Integrated Database
 EL – Exclusion List
 GOI – Government of India
 RCEP – Regional Comprehensive Economic Partnership



Chapter 1: Introduction

1.1. Background

India is a complex and a diverse country characterized by a mixed economy, federal state structure and vast regional variations in economic growth, development and welfare. India is a country of great diversity ecologically, climatically, demographically, social and culturally and therefore manifest in equally wide variations in terms of geography, regions, states and other related aspects of economy, politics and policy (Wolcott, 2003). Thus, it would be inaccurate to make general statements about India's performance in economic development as if they are applicable to the country as a whole. The latter could also be the reason and perhaps why, discussions about India's external orientation/opening up can miss some crucial dimensions on what may be referred to as India's historical trends in developmental reform that cover the decades of post-independent India's economic and political history.

Indian development experience characterized by inward oriented policies during post-independence (1950-1970s) decades was no exception to that of under developed/developing countries in the post-colonial era. The strategies of underdeveloped countries at the time had three dimensions: emphasis on autonomous development; import-substitution strategies to lay the foundations for industrialization; strategic role of state in development at a time when market forces were seen insufficient (Nayyar, 2013).

While the success stories of East Asian economies were spreading to Malaysia and Thailand in late 1980s and early 1990s, India's debt crisis in the 1990s forced India to open up to global markets. It was in early 1990s India adopted Look East Policy and actively pursued engagements with the East.

Prior to 1990, ASEAN-India trade flows did not have the same dynamism as now. Other than differing political orientations, most of the South Asian countries in general and India in particular restricted their imports by adopting Import – Substitution (IS) strategies and also at times due to foreign exchange shortages. However, during the early 1990s, the partnership received institutional stimulus as ASEAN and India actively sought mutual cooperation, the impacts of the financial crisis that affected ASEAN in the late 1990s and also driven by the growing importance of ASEAN in the region. The initiation of market reforms in India and her adoption of Look East Policy contributed further to the growing relations between India and ASEAN. As a result of subsequent bilateral Comprehensive Economic Partnership Agreements (CEPAs) with individual ASEAN member countries and the signing of ASEAN-India Free Trade Agreement (FTA) in goods in 2009, trade flows increased manifold.

1.2. Thesis Statement

This thesis, analyzes three different aspects of regional economic integration. One, impact of the ASEAN-India Free Trade Agreement (AIFTA) in selected Indian trade sectors; two, assessment of the patterns and determinants of India's intra-industry trade (IIT) in manufactures with six major ASEAN economies, they are, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam; and three, estimation of tariff equivalent of non-tariff measures (NTMs) on leading sectors of Indian imports from the six ASEAN economies.

In this context, this thesis examines how well tailored is the ASEAN-India Free trade Agenda, while keeping in perspective the country specific characteristics of India and ASEAN member countries.

1.3. Rationale

1.3.1. Policy Perspective:

Policies, those driving economic integration “top-down” and those facilitating it “bottom-up” are indispensable. Designing those policies is not straightforward as the motives – political, public policy related, interest group oriented, and protectionist – are conflicting and often non-transparent. “...It is not really possible to separate the economic integration from the political element of integration...” (Allen, 1963). Political (Hosny, 2013) and economic factors are not only interwoven but also reinforce economic integration. For instance, growing concerns about non-tariff measures on both Indian and ASEAN business groups require urgent and well-researched policy attention.

From the point of view of above discussed shifts in global and regional trade and an attempt to understand and project what might hold for the future, I choose to enquire into ASEAN-India trade in the thesis.

Interestingly, the possible inferences that can be drawn from the trends are not straightforward and are conditioned on several factors. Their implications are specific and in coherence with the economic characteristics of India and ASEAN countries. Therefore, this thesis attempts to explore and enumerate how these trends are altering the ASEAN-India trade dynamics and identify and examine the barriers to such dynamics to evolve in a way that the potential economic welfare implications are maximum.

There are other policy concerns that influence policy perspectives as well especially with regard to larger “development” concerns of a country. Reflecting on how trade can reinforce development, Joseph E. Stiglitz and Andrew Charlton in “Fair Trade For All”, stated that, “In short, trade liberalization should be a tailored policy, not a one-size-fits-all” (Stiglitz & Charlton, 2005).

Arguments for benefits of free trade are static (Viner, 1950) and dynamic (Plummer, Cheong, & Hamanaka, 2011) in nature. However, these benefits are largely based on assumptions consistent with the central proposition of mainstream economics - that trade is mutually beneficial. Sizeable empirical evidence exists in favor of the latter proposition though not free of methodological flaws (Stiglitz & Charlton, 2005). However, when viewed from the perspective of the inequalities of income and wealth between trading partners, realization of these cumulative effects and the supporting arguments remain contentious (Chakravathy, 1997).

1.3.2. Economic Perspective:

The economic rationale of the thesis is the changing dynamics of global trade and the how Asia and Asian emerging market economies (EMEs), is central to the evolving global trade patterns and trends. The economic integration of ASEAN, located “at the geographic centre of the emerging global centre of production and demand”, that is, “the South Asia-Southeast Asia- Northeast Asia-Australia/New Zealand corridor” (MPAC ASEAN, 2010) and India, one of the largest emerging markets has significant implications.

Situating ASEAN-India trade and economic integration in the midst of these global and regional trade dynamics gives a better perspective on why and what makes this two decade long economic partnership important and the what holds in the future for it. Following are the emerging and evolving global trade patterns predominantly driven by EMEs (IMF, 2011).

Firstly, trade liberalization, vertical specialization and income convergence necessarily in that order, are driving the global trade shifts. In the case of ASEAN economies, they are also active participants in Asian and international production networks (IPNs) and are in line with the trade shifts.

However, do these shifts hold true in case of ASEAN-India trade? This could be partially understood by looking at India’s balance of trade. India’s overall trade balance is negative with Malaysia, Singapore and Thailand since 2003. However, as shown in Figure 1, the trend in balance of trade in manufactures and non-manufactures, when viewed separately, imply vertical specialization. For instance, the balance of trade was similar between manufactures and non-manufactures until 2003. But it diverged from 2003 onwards and continues to the present implying growing import of capital goods/inputs for domestic production and exports, thus, contributing to the gradual expansion of manufacturing base in India. Moreover, due to the emergence and expansion of the global values chains (GVCs) that have facilitated fragmentation of production, concerns about growing trade deficit have become irrelevant.

Further, Figure 2 shows the gradual convergence of India’s per capita income with ASEAN countries given by relative inequality measure (Balassa, 1986b). The value of the measure lies between 0 and 1. The relative inequality increasing as the value tends towards 1. The income convergence is one of the factors determining intra-industry trade (Helpman & Krugman, 1985).

Secondly, vertical specialization has led to considerable growth in regional trade concentration. According to integration indicators (ARIC ADB), India's trade intensity index (TII) with ASEAN has grown at a CAGR of 0.87% over the past two decades. Interestingly, the figure with that of Asia is -0.37%. Evidently, the figures indicate India's trade concentration is higher and growing with ASEAN when compared to world and Asia, respectively.

Thirdly, an increase in exports of high-technology products is observed among EMEs, particularly, machinery, electronics and transport equipment. Figure 1.3 shows the trends in high-technology exports of ASEAN and India to world over the last decade (2005-14), see Table 1.1 for the CAGRs. First half of the decade (2005-09), when exports were affected by 2007 global crisis, the compound annual growth rate (CAGR) was volatile which became stable in the later half (2010-14).

Table 1. 1 Exports of High-Technology Products to World, 2005-2014

Exporting Countries	Compound Annual Growth Rate		
	2005-2009	2010-2014	2005-2014
Indonesia	0.33%	-4%	-4%
Malaysia	-14%	-3%	-6%
Philippines	-5%	10%	-1%
Singapore	-19%	1%	-6%
Thailand	-1%	1%	3%
Vietnam	22%	70%	49%
India	27%	16%	17%

Source: Based on UN Comtrade data via WITS.

The CAGRs of exports of high-technology products to world were -4% and -3% for Indonesia, the largest ASEAN economy predominantly endowed with natural resources, and Malaysia, where electronics industry adds up to the country's 33% of exports and 24% of employment in 2014, (MIDA), respectively during 2010-2014.

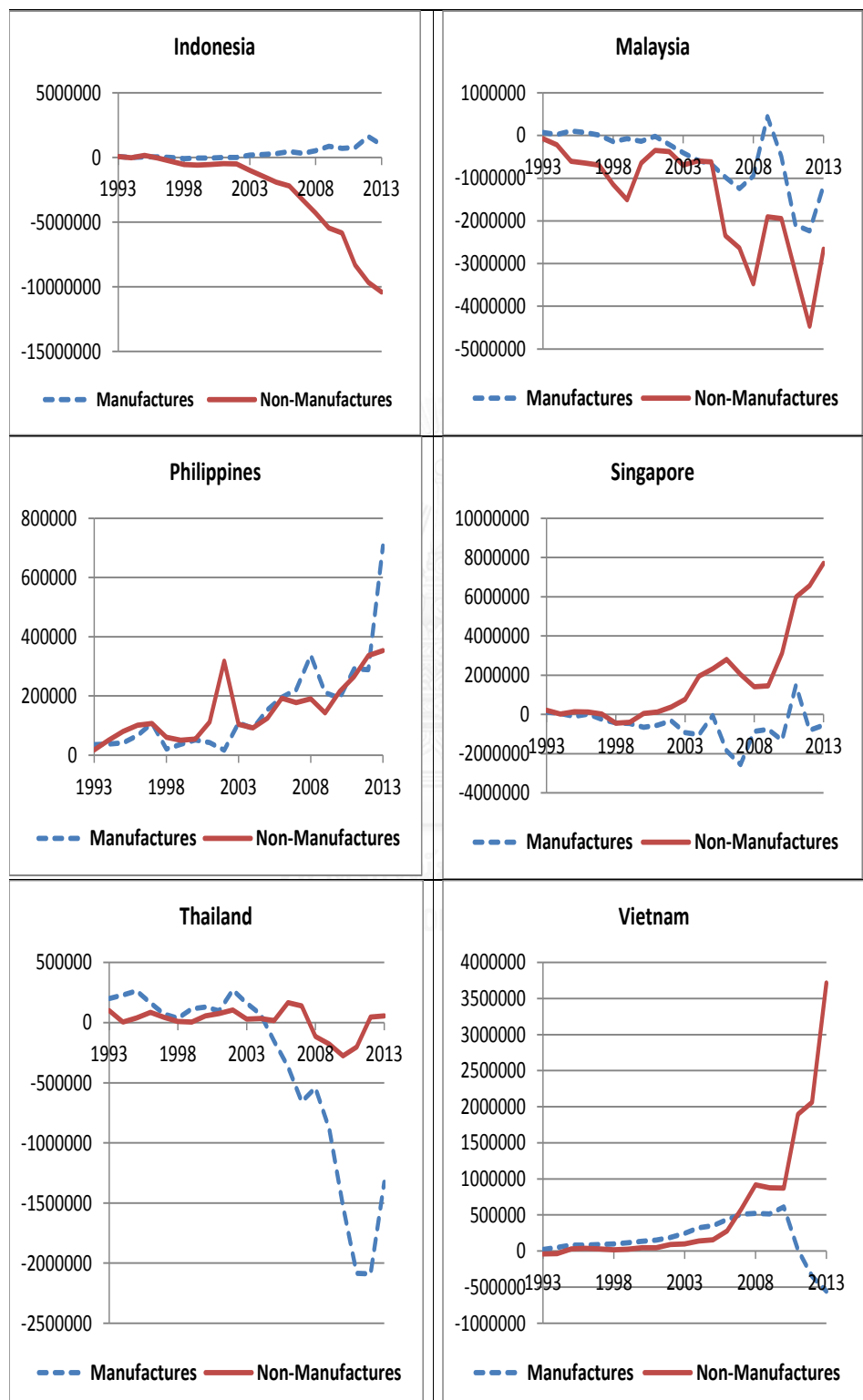
Whereas the CAGR for Singapore, an advanced economy and other emerging markets such as Thailand, Vietnam and India were 1%, 70% and 16% respectively.

However, the significant growth over the decade (2005-2014) was experienced by Vietnam (49%) and India (17%).

The trend explains gradual technological convergence in the region which can predictably increase further in future with important implications for trading patterns and production structure.

Also, India's exports of high-technology products to ASEAN grew at a CAGR of 45.74% whereas with the world it was 26.70% during 2005-09 (see Table 1.2) Though the CAGRs declined sharply in contrast to that with world exports during (2010-2014), over the decade (2005-2014) the exports grew at almost similar rates.

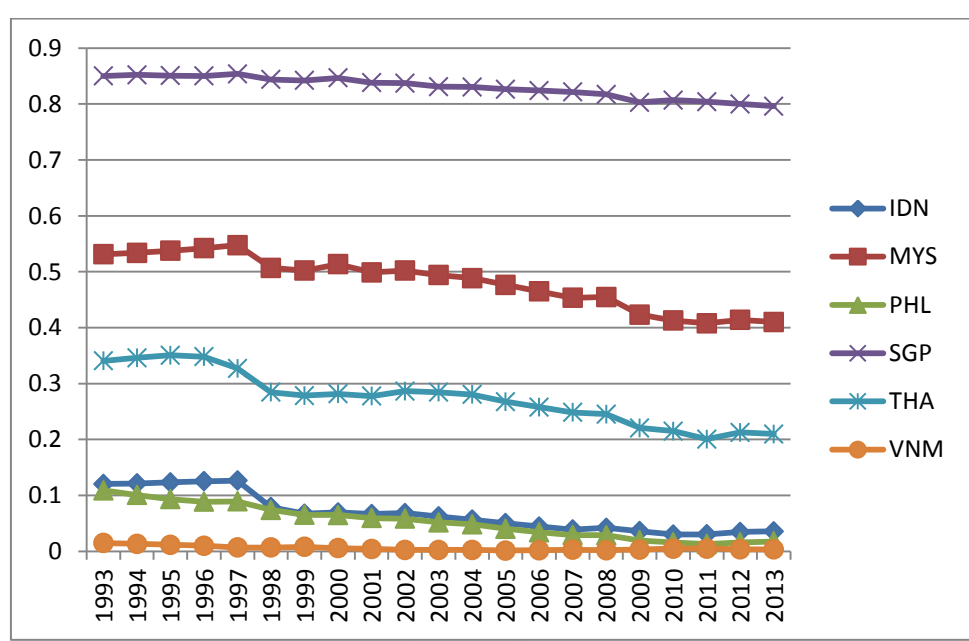
Figure 1. 1 India's Balance of Trade (in US \$) in Manufactures and Non-Manufactures with Individual ASEAN Countries (1993-2013)



Source: Author's calculations based on UN Comtrade.

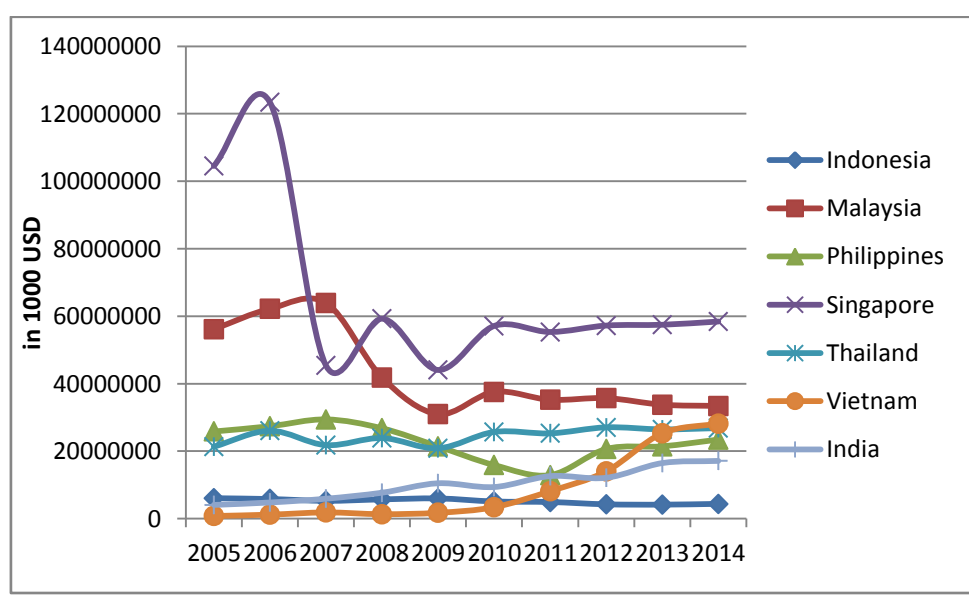
On the contrary, India’s imports from ASEAN grew at a CAGR 5.43% whereas with the world it was 7.76% over the decade (2005-2014). Such export-import specific dynamics, to be explored in the chapters that follow, reflect on the growing regional concentration, thus, drawing attention to the determining factors.

Figure 1. 2 Trends in India-ASEAN Relative Per Capita GDP Inequality Measure, 1990-2013



Note: The value of the measure lies between 0 and 1. The relative inequality increasing as the value tends towards 1. Source: Author’s estimations based on UN Comtrade data via WITS.

Figure 1. 3 Trends in Exports of High-Technology Products to World, 2005-2014



Source: Author’s estimations based on UN Comtrade data via WITS.

Table 1. 2 Trends of India's Exports of High-Technology Products, 2005-14

Trade Flow		Compound Annual Growth Rate (in %)		
		2005-09	2010-14	2005-14
Exports	World	26.70	16.24	17.31
	ASEAN	45.74	9.41	16.43
Imports	World	9.35	6.03	7.76
	ASEAN	-3.28	11.71	5.43

Source: Based on UN Comtrade data via WITS.

1.4. India-ASEAN Trade

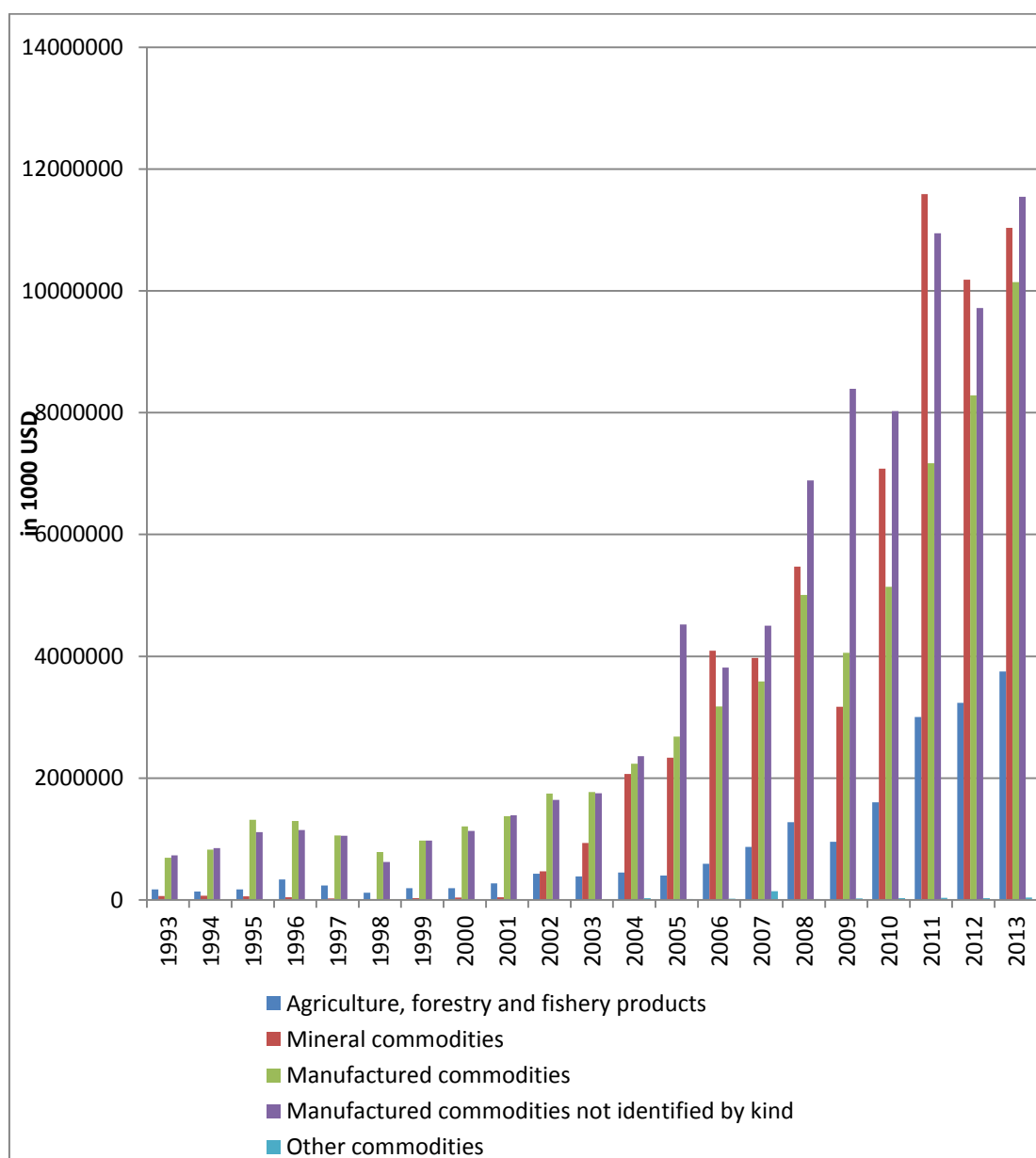
Further to the emerging and evolving global trade patterns to which India and ASEAN economies conform, below section gives an account of current status of India-ASEAN trade specifically in terms of shifts in product composition and trade complementarity.

a) Trade Composition

Figure 1.4 and Figure 1.5 show the shifts in composition of Indian exports to and imports from ASEAN over two decades respectively. The total trade shifts are represented by five categories of goods under Standard Industrial Classification (SIC).

The annual compound growth rate of exports of agriculture, forestry and fishery related products increased by 17.34% during 2003-2014 which was 8.25% during 1993-2003. The growth rate of exports of mineral commodities decreased by -2.35% during 2003-2014 which was 30.31% in 1993-2003. Mineral commodities consist of metallic ores and concentrates, coal and lignite, crude petroleum and natural gas, non-metallic minerals except fuels. The growth rate of exports manufactured goods almost doubled during 2003-2014 which was 9.85% during 1993-2003. Manufactured goods consist of food and kindred products, tobacco manufactures, textile mill products, apparel, wood, paper products, furniture and fixtures, printing, publishing, chemicals, petroleum refining related products. The growth rate of exports of manufactured commodities (not identified by kind) more than doubled during 2003-2014 which was 9.12% during 1993-2003. Manufactured commodities not identified by kind consist of rubber, leather, metal products, electrical machinery, and transport equipment, scientific and professional instruments and so on. The growth rate of exports of other commodities decreased by -0.72% during 2003-2014 which was 14.33% during 1993-2003. Other commodities consist of scrap and waste, used or second hand merchandise and so on. The significant positive shift in Indian exports of agriculture and manufactures products to ASEAN is the evidence to India's gradual shift from traditional to non-traditional trade patterns.

Figure 1. 4 Composition of Indian Exports to ASEAN

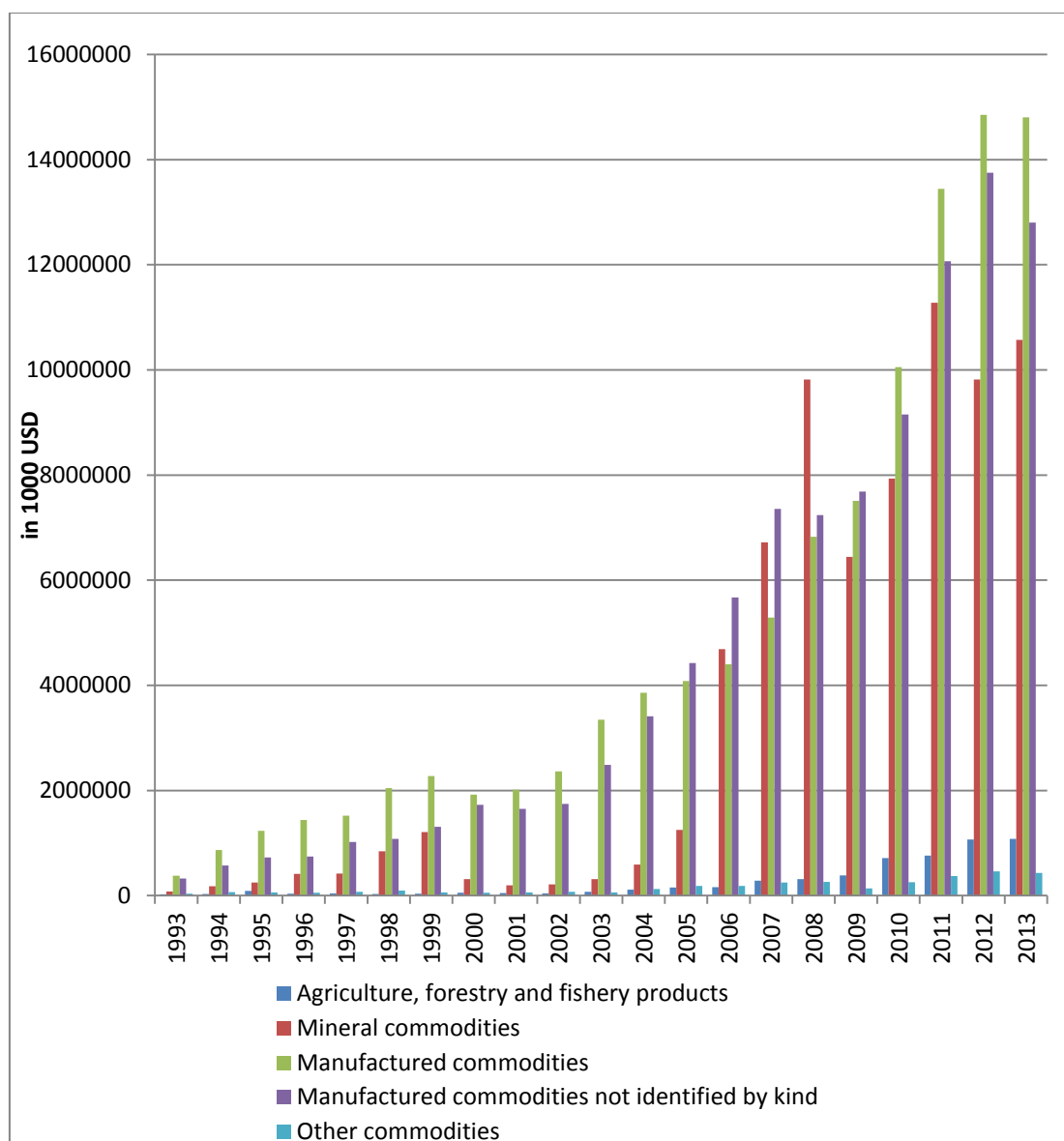


Source: Drawn by the author as per Standard Industrial Classification (SIC) data sourced from UN Comtrade data via WITS.

Similarly, the annual compound growth rate of Indian import of agriculture, forestry and fishery related products from ASEAN increased by 21% during 2003-2014, which was 9.79% during 1993-2003. The growth rate of imports of mineral commodities increased by 27.56% during 2003-2014 which was 14.46% during 1993-2003. The growth rate of import of manufactured products decreased by -8.30% during 2003-2014 which was 24.34% during 1993-2003. The growth rate of import of manufactured products classified by kind decreased by -4.64% during 2003-2014

which was 22.44% during 1993-2003. The growth rate of import of other products increased by 15.20% during 2003-2014 which was 5.74% during 1993-2003.

Figure 1. 5 Composition of Indian Imports from ASEAN



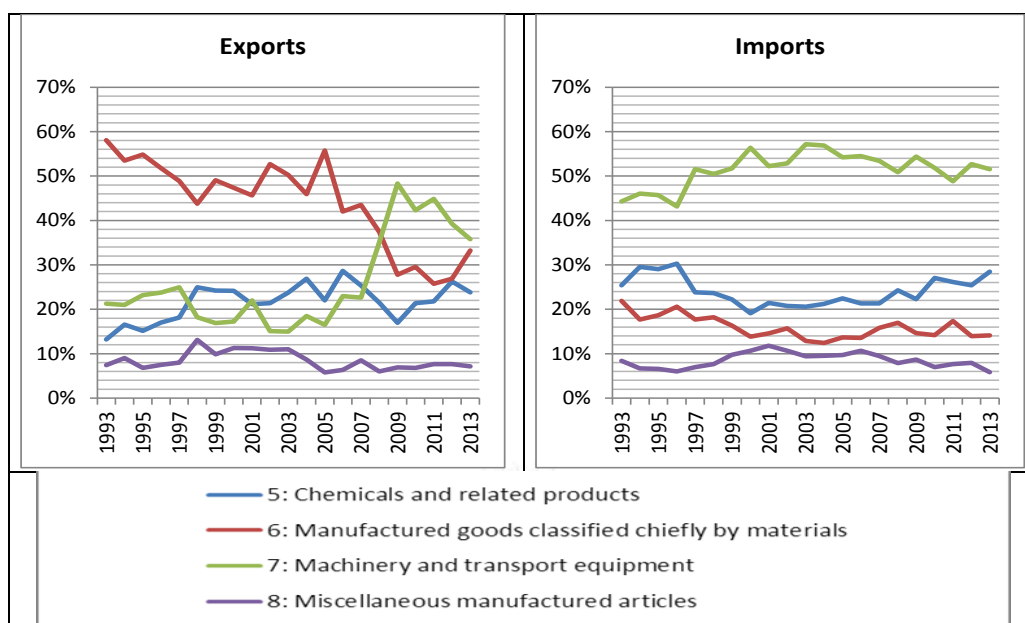
Source: Drawn by the author as per Standard Industrial Classification (SIC) data sourced from UN Comtrade data via WITS

Significant shift in the composition of Indian exports of manufactured goods was observed in case of product code 6 – manufactured goods classified chiefly by material which saw a sharp decline since 2005 onwards (see Figure 1.6). These goods consist of leather, rubber, cork and wood manufactures, paper and paper board, textile yare and fabrics, iron and steel, non-metallic mineral manufactures and so on.

Interestingly, the decline in exports of product code 6 was coupled with sharp increase in export of product code 7 – machinery and transport equipment since 2003 onwards till 2009 when it began to decline. These goods consist of power-generating machinery, metal work machinery, telecommunications, road vehicles and transport equipment among others.



Figure 1. 6 Composition of India's Manufactures Exports to and Imports from ASEAN



Source: Drawn by the author as per Standard Industrial Classification (SIC) data sourced from UN Comtrade data via WITS.

b) Trade Complementarity Index

Trade complementarity Index (TCI) in Table 1.3 indicates the degree of structural trade complementarity between India and ASEAN, with individual member countries and as a group. Of the six ASEAN countries, TCI during 2004-2014, on an average, has been highest in case of Thailand (60.13) followed by Indonesia (59.84), Vietnam (54.47), Philippines (52.96), Malaysia (50.73) and Singapore (47.03). The TCI indicates the extent to which India and ASEAN economies vary structurally. The TCI has grown at positive CAGRs led by Philippines (3.18%), Malaysia (2.67%), Singapore (2.27%), Indonesia (2.14%), Thailand (1.41%), except Vietnam (-1.12%) where the growth rate has been negative.

Table 1. 3 India's Trade Complementarity Index with ASEAN (2004-2014)

Year	IDN	MYS	PHL	SGP	THA	VNM	ASEAN
2004	50.98	42.4	40.47	37.47	51.61	53.54	47.16
2005	52.13	44.52	42.95	40.48	53.54	55.09	49.49
2006	57.38	46.22	47.3	44.44	58.25	61.69	53.68
2007	58.95	47.92	49.47	47.05	58.1	58.33	56.42
2008	62.94	52.13	54.53	50.03	62.77	61.88	61.27
2009	59.62	48.89	53.61	48.2	56.02	53.74	55.83
2010	63.18	50.59	55.64	48.34	62.62	54.28	59.21
2011	62.02	51.28	59.86	49.13	64.98	54.28	60.52

2012	63.19	54.8	57.12	49.39	63.51	50.25	60.32
2013	64.83	57.07	59.27	52.22	67.56	48.29	63.14
2014	63.01	57.79	59.96	50.68	63.23	47.84	61.12
Average	59.84	50.73	52.96	47.03	60.13	54.47	57.11
CAGR	2.14%	2.67%	3.18%	2.27%	1.41%	-1.12%	2.63%

Source: Compiled by the Author

The TCI between India and ASEAN as a group, on an average, has been 57.11 during 2004-2014. The average was as low as 39.08 during 1996-2003. The increase in TCI indicates the following. Firstly, India and ASEAN are becoming structurally similar gradually. Secondly, during 1993-2003 Indian exports of manufactured goods to ASEAN were dominated by resource based and intermediate goods, whereas, imports from ASEAN were dominated by capital goods. However, evidently, since 2003 the product composition has been changing with a considerable growth in India's export share of capital goods. For instance, in 2013, Indian exports were led by capital goods such as machinery and transport equipment in case of PHL (45.33%), SGP (54.37%) and IDN (33.87%). Whereas resource based goods such as leather, rubber, cork and wood, paper and related articles, textiles, non-metallic minerals, iron and steel, non-ferrous metals among others held a major share of Indian exports to MYS (36.71%), THA (55.60%) and VNM (52.90%). Indian imports, in 2013, from all six countries, as usual, were dominated by machinery and transport equipment. The shares of IDN, MYS, PHL, SGP, THA and VNM stood at 35.72, 51.09, 79.65, 47.26, 48.34 and 77.24 percent, respectively. This implies a shift from trade driven by comparative advantage specialization to that of economies of scale, though at a slower rate.

c) Why India-ASEAN trade increased significantly since 2003?

It can be observed in the above descriptive data and in findings of the subsequent chapters that India-ASEAN trade increased significantly since 2003 onwards. Considering this, throughout the thesis the following periodization – 1993-2003 and 2003-2013, is done for the analysis of secondary data and the findings of the thesis chapters.

Reasons for sudden spurt in trade can be due to a combination of both short-term and long-term factors. For this it is necessary to look at the structural changes that take place in an economy. In general, economic theory argues for both structural changes that are required to take place in an economy as also explain the structural changes that occur. The long-term and short-term reasons are as below.

Long-term reasons: For an economy that is largely focused inwards, to become export oriented and outward oriented economy requires corresponding structural changes in the economy concerned. This was the case of India also. Structural changes that India began in 1991 were bearing fruit 2000 onwards. External conditions were changing simultaneously where countries were opening up to trade and liberalization, thus making the environment conducive for export and outward

orientation. Implementation of WTO rules were also originally intended to push trade growth but both negotiating and procedural delays also led in the interim to a number of regional trade agreements both bilaterally and multilaterally.

Short-term reasons: It was on 8 October 2003 that the initial framework agreement of ASEAN-India free trade area was signed in Bali, Indonesia. The final agreement was signed on 13 August 2009. Signing of the agreement in 2003 is a milestone in formal economic relations that began in early 1990s. The agreement marked a major shift and a big push for bilateral trade between ASEAN and India.

Further, India-Singapore CEPA and India-Malaysia CEPA came into effect in 2005 and 2011 respectively. These two CEPAs in goods, services and investment at a time (post 2000) when Indian service sector began booming, gave India a competitive edge in trade. Moreover, Singapore with which India shares a historical relations since British rule is one of India's top five trading partners and investments destinations. This is followed by a CEPA with Malaysia (also a former British colony with historical and Indian migrant links with especially South India) which is India's another leading trading partner along with Thailand.

Since the Asian financial crisis in 1997 ASEAN countries were also orienting themselves for economic development through trade gains.

These trade agreements have had a cumulative effect and have been influencing the trading patterns since 2003. This partially explains the spurt on trade after 2003.

1.5. Role of FTAs in India-ASEAN Trade

a) Review of FTAs

ASEAN consists of 5 out of 28 FTAs signed by India. The 5 FTAs are: Indonesia-India Comprehensive Economic Partnership Agreement (CEPA), negotiations were launched on 4 October 2011; Malaysia-India CEPA, signed on 18 February 2011 and in effect since 1 July 2011; Singapore-India CEPA, signed on 29 June 2005 and in effect since 1 August 2005; Thailand-India CEPA, signed in 2004 and negotiations were launched in 2014; and ASEAN-India CEPA, initial framework agreement was signed on 8 October 2003 and the final framework agreement was signed on 13 August 2009. The FTA came in effect since 1 January 2010.

ASEAN-India FTA, signed in 2009, provides tariff liberalization on a mutually agreed tariff lines from the sides starting from 1st January, 2010 (see Table 1.4).

Table 1. 4 ASEAN-India Free Trade Agreement – Coverage

Track	Track Description	Coverage of Tariff Lines
NT - 1	Tariffs to be reduced and subsequently eliminated	70%
NT - 2	Tariffs to be reduced and subsequently reduced	9%
Sensitive	Applied MFN rates that are above 5% will be reduced to 5%	11.1%
Special Products	Reduce tariff at a much gradual pace than Normal or Sensitive tracks	0.1%
Exclusion List	No reduction commitment have been made	9.8%

Source: Based on Pal, 2009

As shown in Table 1.5 India-Singapore CEPA and India-Malaysia CEPA relatively have greater depth in terms of coverage of FTA provisions, specifically investment and services. ASEAN-India FTA in services and investment were signed in 2014, negotiations were concluded and are awaiting to be ratified by individual ASEAN member countries.

Table 1. 5 Comparison of India's concluded FTAs with ASEAN members

Sl. No.	Chapters	Sub-topics	Sub-topics	ASEAN-India CEPA	India-Singapore CEPA	India-Malaysia CEPA
1	General provision	Full text	...	✓	✓	✓
		Principles and objectives	...	✓	✓	✓
		General exceptions	...	✓	✓	✓
2	Market access of goods	Full text	...	✓	✓	✓
		Product coverage	General	✓	✓	✓
			Agriculture	NP	NP	NP
			Textiles and Apparel	Np	Np	Np
		Basic disciplines	...	✓	✓	✓
		Tariff elimination/reduction	...	✓	✓	✓
		Tariff rate quotas (TRQ)	...	NP	NP	NP
		Special safeguards (SSG)	...	NP	NP	NP
		Bilateral emergency actions	...	✓	✓	NP
		Early harvest program (EHP)	...	NP	NP	NP
Other measures	...	✓	✓	NP		
3	Non-tariff measures/Quantitative Measures	Prohibitions	...	✓	✓	✓
		Exceptions	...	✓	NP	NP
4	Trade facilitation	Customs procedures	Full text	✓	✓	✓
			Transparency	✓	✓	✓

			Release of goods	✓	✓	✓
		Import licensing	...	NP	✓	NP
		Standard and conformance	TBT	NP	✓	✓
			SPS	NP	✓	✓
		Mutual recognition	Product standards	NP	✓	✓
			SPS	NP	✓	✓
		Other measures	...	✓	✓	NP
5	Export measures	Export taxes	...	NP	NP	NP
		Export subsidies	...	NP	NP	NP
6	Rules of origin	Full text	...	✓	✓	✓
		Definition of originating product	...	✓	✓	✓
		De minimis	...	✓	✓	✓
		Certification and verification of origin	...	✓	✓	✓
		Special products	Textiles and apparel	✓	NP	NP
		Special provisions	...	✓	✓	NP
7	Trade remedies	Full text	...	NP	NP	NP
		Anti-dumping	...	NP	✓	✓
		Countervailing duties	...	NP	NP	NP
		Subsidies	...	NP	✓	NP
		Safeguards	...	✓	✓	✓
8	Services	Full text	...	NP	✓	✓
		Scope and coverage	Cross border trade (mode 1 and 2)	NP	✓	NP
			Commercial presence	NP	✓	NP
			Mobility of persons	NP	✓	✓
		Basic disciplines	...	NP	✓	✓
		Exceptions/reservations	...	NP	✓	NP
		Market access	...	NP	✓	✓
		Mutual recognition	...	NP	✓	✓
		Denial of benefit	...	NP	✓	✓
		Safeguards	...	NP	✓	✓
		Domestic regulation	Licensing and certification	NP	✓	✓
			Treatment of monopolies	NP	✓	✓
		Sectoral commitments	Financial services	NP	NP	✓
			Telecommunications	NP	✓	NP
			Air transport	NP	✓	NP
	Others		NP	NP	✓	
9	Investment	Full text	...	NP	✓	✓
		Scope and coverage	...	NP	✓	✓
		Basic discipline	...	NP	✓	✓
		Denial of benefit	...	NP	✓	✓
		Prohibitions	...	NP	✓	NP
		Exceptions	...	NP	✓	✓
		Safeguards	...	NP	✓	NP
		Expropriation and compensation	...	NP	✓	✓
		Subrogation	...	NP	✓	✓

		Transfers	...	NP	✓	✓
		Taxation	...	NP	NP	NP
		Settlement of investment disputes	...	NP	✓	✓
10	Government procurement	Full text	...	✓	✓	NP
11	Competition policy	Full text	...	✓	✓	NP
12	Intellectual property	...	...	NP	✓	NP
13	E-commerce	...	...	NP	✓	✓
14	Dispute settlement	Full text	...	✓	✓	✓
		Scope of application	...	✓	✓	✓
		Procedures	...	✓	✓	✓
		Review/Appeal	...	✓	NP	✓
		Institutional mechanisms	...	✓	✓	✓
15	Labor standards	...	...	NP	✓	NP
16	Environmental policy	...	...	NP	NP	NP
17	Technical cooperation	...	...	NP	✓	✓
18	Institutional mechanism	Implementing provisions	...	✓	✓	✓
		Amendment provisions	...	✓	✓	✓
		Accession	...	✓	✓	NP
19	Other measures	...	...	NP	NP	NP

Note: NP refers to No Provision; Source: Compiled by the author based on ARIC, ADB database

b) Trade Facilitation: Current Status

According to a comparative analysis of trade facilitation provisions in ASEAN and ASEAN+1FTAs (see Table 1.6) the coverage (refer to Table 1.6) of trade facilitation in the ASEAN-India Agreement on Trade in Goods (AITIGA) is “fairly general”. The provisions are said to be “broadly formulated and aspirational and do not commit parties to undertake concrete action or to achieve specific targets or goals” (Wong & Pellan, 2012).

Table 1. 6 Trade Facilitation Provisions in ASEAN and ASEAN+1 FTAs

Trade Facilitation coverage/RTA	ASEAN	ASEAN-Australia-NZ	ASEAN-China	ASEAN-India	ASEAN-Japan	ASEAN-Korea
Customs procedures and co-operation	✓	✓	✓	✓	✓	✓
Technical regulations, standards and SPS measures	✓	✓		✓	✓	✓

NTBs, especially administrative fees and charges	✓	✓	✓	✓	✓	✓
Transparency of laws, regulations and administrative rulings	✓	✓	✓		✓	✓
Use of ICT and E-Commerce	✓	✓	✓		✓	✓

Note: “✓” indicates the presence of provisions.

Source: Wong and Pellan (2012).

1.6. Literature Review

The literature review is conducted in two parts – larger background and specific to the thesis. Firstly, the broad review points out the main ideas of the literature. The literature review also attempts to identify the research gap and points to how the thesis fills the gap. The more detailed review specific to the three aspects are taken up in the following chapters that are part of the thesis.

According to a study (Chanda & Gopalan, 2009), recognition by other Asian countries of India’s growing importance as an investment and export market, as a supplier of manpower, and as a counterbalance to China’s growing regional dominance; India’s recognition of Asia’s growing importance in the world economy; India’s desire to prevent its marginalization and to create a sphere of political and economic influence within East and Southeast Asia; geopolitical considerations motivate Asia-India regional and bilateral initiatives. Since ASEAN economies are led by export oriented growth strategy, huge markets are critical to keep up the growth rates. Therefore, India with its huge market is important for ASEAN in keeping the momentum of its market-driven economic development (Zainal-Abidin, 1997). Based on the detailed case studies of India and five ASEAN countries, complementary role of innovation system and trade regime in promoting the production and use of ICT is suggested (Joseph, 2011). The study points out that ASEAN faces an excess demand for IT manpower including Singapore which is short of it. Thus, cooperation in IT would require relaxation of the restrictions on the mobility of skilled manpower across developing countries. (Scott, 2011) examines India’s emerging political, economic and strategic links with the South-East Asian region as part of its Look East Policy. Observing that India falls only next to USA and China in terms of geopolitical and economic importance in the Southeast Asian region, the study notes despite of China’s attractiveness, India has huge potential for trade and investment owing to its rapid expansion and being one of the largest emerging markets in the world.

Prior to 1990, differing political orientations, import restrictions restricted ASEAN-India trade. Post 1990 though India began liberalization, the slower pace of it has led to the low participation in Asian IPNs (Sen & Srivastava, 2011). Also, India’s approach to the integration has largely been defensive as reflected by long negative

list and the exclusion of key areas such as services (Chanda & Gopalan, 2009). Behind-the-border measures continue to restrict market access and narrow product basket until recently have withheld dynamism in trade flows (Dhar, 2011). High cost of doing business due to inadequate trade facilitation measures, poor transport adds to the significant trade costs.

Stressing on the fact that trade liberalization improves trade but it isn't adequate, enhanced connectivity and trade facilitation measures are also required, the ASEAN-India Connectivity Report – India Country Study (De, 2011) recommends two major approach to improve connectivity – one, land connectivity through India's northeastern region and second, the multi-modal connectivity through Southern India, mainly through the Chennai Ennore area. According to the report major obstacle to India-ASEAN connectivity is that of missing rail and roadways in Myanmar. It also considers the need to improve operational efficiency of Indian ports, airports and required investments.

1.6.1. Research Gap

The existing research on ASEAN-India relations touches upon a wide range of areas in the light of various dimensions – political, strategic and economic. However, the pool of research is not free of certain limitations as specified below:

- Firstly, many of the studies and their findings are not backed by theoretical and empirical evidence;
- Secondly, various aspects of trade are analyzed in general. Studies treating specific aspects such as intra-industry trade, trade facilitation, investment and services, non-tariff barriers in the ASEAN-India context are lacking;
- Thirdly, studies related to India's participation in IPNs are more policy oriented and qualitative, research backed by empirical assessment are limited;
- Fourthly, work related to ASEAN-India connectivity are skewed, in that, emphasis on institutional and people-to-people connectivity are side-lined;
- Lastly, studies emphasizing how the ASEAN-India trade patterns have evolved over time are inadequate.

1.6.2. How does the thesis fill the research gap?

The thesis attempts to fill the research gap by looking at some of the above mentioned missing dimensions.

- Providing empirical assessment of ASEAN-India trade, especially by focusing on the hitherto uninvestigated intra-industry trade and non-tariff measures;

- Assessing the patterns and nature of ASEAN-India trade since the inception of formal economic cooperation in 1993 to 2013;

1.7. Research Questions

As part of the overall thesis in this work, research questions that this thesis attempts to answer are given below:

- i) What is the ex-post impact of ASEAN-India FTA on the leading trade sector, that is, Mineral Fuels, Oils and Related Products?
- ii) Do the ex-ante projection of negative impact of ASEAN-India FTA on Indian plantation sector/commodities hold true?
- iii) What are the patterns and determinants of India's IIT in manufactures with ASEAN Countries (1993-2013)?
- iv) What is the tariff equivalent of non-tariff measures faced by sector-specific leading Indian imports from individual ASEAN countries?

The organization of the thesis with regard to addressing each of the four questions listed above is done as in the following manner. Chapter 2: ASEAN-India Free Trade Agreement: An Ex-Post Impact Assessment addresses the first two questions. Chapter 3: India-ASEAN Intra-Industry Trade in Manufactures: An Empirical Assessment addresses the third question above. Finally Chapter 4: ASEAN-India Trade: An Assessment of Non-Tariff Measures examines the issues raised in the fourth question above.

1.8. Purpose Statement

Keeping with the organization of the thesis as stated above each of the chapters are organized in the following manner with a statement of purpose for each chapter followed by objectives.

A. Chapter 2: ASEAN-India Free Trade Agreement: An Ex-Post Impact Assessment

Statement of purpose:

Trade can be mutually beneficial. However, the benefits are conditioned by factors such as how well designed are the free trade agreements/process of liberalization, wealth and income inequalities and other host of participating country-specific economic characteristics. The study, keeping in perspective the ex-ante projections by previous studies, conducts an ex-post impact assessment of ASEAN-India FTA in selected sectors. The empirical

assessment adopts an adapted version of the Lloyd and McLaren (2004) model.

Objectives:

- To conduct an ex-post impact assessment of ASEAN-India FTA on the leading trade sector, that is, Mineral Fuels, Oils and Related Products;
- To verify if the ex-ante projection of negative impact of ASEAN-India FTA on Indian plantation sector/commodities holds true.

B. Chapter 3: India-ASEAN Intra-Industry Trade in Manufactures: An Empirical Assessment

Statement of Purpose:

In recognition of changing trade patterns, specifically product composition, income convergence, absorption of technology, the study enquires into India's intra-industry trade (IIT) in manufactures with six major ASEAN economies from the inception of formal economic arrangements in 1993 to the year 2013. The patterns of IIT in manufacturing product groups 5, 6, 7 and 8 (SITC Revision 3) are identified by using Grubel Lloyd Index (GLI) at 3-digit level. The determinants of IIT are obtained using Random-Effects Generalized Least Squares (GLS) regression model. The analysis is done bilaterally between six ASEAN countries, and each country pair treated separately.

Objectives:

- To identify and assess the patterns and determinants of India's IIT in manufactures with the six economies of ASEAN, viz., Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam for the period 1993-2013.

C. Chapter 4: ASEAN-India Trade: An Assessment of Non-Tariff Measures

Statement of Purpose:

ASEAN-India FTA, signed in 2009 and in effect since January 2010, has facilitated successive reduction in tariffs on trade in goods. But significant amount of trade costs are in the form of non-tariff measures (NTMs), which is one of the major problems hindering the bilateral trade from realizing its potential. The study estimates tariff equivalent of NTMs on sector-specific

leading Indian imports from ASEAN countries using relative prices differences. Qualitative analyses of their nature is conducted using contextual, descriptive data, drawn from academic literature, reports by government and international institutions and business surveys, national and international databases.

Objectives:

- To estimate and assess tariff equivalent of non-tariff measures faced by Indian imports from individual ASEAN countries.

1.9. Scope of the Study

International trade is a dynamic activity where a number of elements interact in determining the structure, volume and patterns of trade. In this thesis the focus is on three aspects of India's trade with ASEAN member countries. First, impact of ASEAN-India FTA, covering the period 2005-2014; second, an assessment of India's intra-industry trade in manufactures with ASEAN, covering the period 1993-2013; third, an assessment of ASEAN-India non-tariff measures, covering the period 2010-2014.

The ten ASEAN member countries are diverse and distinct economies. In view of trade intensity and availability of data, the thesis covers India's trade with six major ASEAN economies, they are, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. Particularly, the empirical assessments juxtapose six diverse country-pairs in a single frame. Thus, it is beyond the scope of this thesis to examine minute country-specific characteristics.

Throughout the thesis ASEAN refers to the six major economies under consideration.

1.10. Contribution of the Study

A significant contribution of the thesis is that it juxtaposes six diverse country-pairs, viz., India-Indonesia, India-Malaysia, India-Philippines, India-Singapore, India-Thailand and India-Vietnam, in a single frame. This enables an emphasis on the contrasts across six major, diverse ASEAN economies.

The chapter-specific contributions are explained below.

Chapter 2: ASEAN-India Free Trade Agreement: An Ex-Post Impact Assessment

The previous literature on ASEAN-India FTA mainly consists of ex-ante studies (except a few recent researches). This study contributes, first, as one of the few ex-post impact assessments, focusing on leading Indian trade sector and; second, it verifies the ex-ante projections by previous literature.

Chapter 3: India-ASEAN Intra-Industry Trade in Manufactures: An Empirical Assessment

This study is the first to exclusively examine the patterns and determinants of India's intra-industry trade (IIT) in manufactures with six major ASEAN countries from the inception of formal economic arrangements in 1993 to the year 2013.

Chapter 4: ASEAN-India Trade: An Assessment of Non-Tariff Measures

The studies on NTMs in the ASEAN-India context are lacking while the concerns related to NTMs are growing, especially after the FTA come in to effect. This study is the first to exclusively focus on non-tariff measures (NTMs). Specifically, it estimates tariff equivalent (TE) of NTMs on Indian imports from six individual ASEAN member countries.

1.11. Study Conclusions

The concluding Chapter 5 synthesizes the answers to the research questions raised above, identifies and discusses policy implications, suggests policy recommendations, points to the thesis limitations and concludes the thesis by providing a brief note on directions for future research.

Chapter 2: ASEAN-India Free Trade Agreement: An Ex-Post Impact Assessment

2.1. Introduction

ASEAN-India Free Trade Agreement (AIFTA), signed in 2009 and in effect since January 2010, has facilitated successive reduction in tariffs on goods trade between ASEAN members and India. The post-AIFTA (2010-2014) average annual trade growth is 14% whereas the pre-AIFTA (2005-2009) figure stood at 22% (ARIC ADB).

What is the purpose in examining the AIFTA? To begin with, implications of FTAs can be static (Viner, 1950) and dynamic in nature. In the long-term the dynamic effects occur in the form of scale and variety, technology transfer and foreign direct investment, structural policy changes and reforms, competitiveness and growth effects.¹ However, these dynamic implications are largely based on assumptions consistent with the central proposition of mainstream economics - that trade is mutually beneficial. When viewed from the perspective of the inequalities of income and wealth between the trading partners, realization of these cumulative effects and the supporting arguments remain contentious².

According to the existing ex-ante impact assessment studies on ASEAN-India FTA, India is likely to experience a range of positive and negative effects that vary across the sectors. Prior to signing of the FTA public opposition was observed among different interest groups. Over the last few months, doubts have been raised by government representatives, think-tanks and business groups about the effectiveness of the FTAs signed by India over the last decade³. The major concerns include increase in imports coupled with stagnation in exports of India⁴, inability of the manufacturing sector to take advantage of the FTAs⁵, inverted duty structure observed in many sectors⁶ that are discouraging domestic value addition, poor infrastructure adding to transport costs among others.

To be precise, the current trends raise questions such as do these observations hold true for all the FTAs signed by India? Is the impact of FTA with ASEAN an

¹ See Plummer, M. G., Choeng, D. and Hamanaka, S. (2001), Methodology for Impact Assessment of Free Trade Agreements, Asian Development Bank, ISBN: 978-92-9092-197-4, pp. 18-20.

² Refer to Chakravarty, Sukhamay (1997), Trade and Development: Some Basic Issues In Writings on Development, New Delhi: Oxford University Press, pp: 126-141

³ Too many FTAs, too few benefits? Business Standard, 22nd June, 2014

⁴ Ibid.

⁵ Ibid.

⁶ FICCI Survey on Inverted Duty Structure in Indian Manufacturing Sector, October, 2013

exception to this? If not, do the trends reflect India's domestic unpreparedness to handle the host of challenges that FTAs bring in? How did AIFTA affect India's welfare measured in terms of changes in total trade and terms of trade in the past five years? Do the findings of the ex-ante impact projections of AIFTA hold true? These are some of the broad questions the chapter attempts to answer.

The chapter employs an adapted version of the Lloyd and McLaren (2004) model. First part consists of an ex-post impact assessment of AIFTA on the leading trade sector, that is, Mineral Fuels, Oils and Related Products, as per 2 digit HS 2002 classification, the commodities are analyzed at 4 digit level subsequently. Second part verifies if the ex-ante projection of negative impact on Indian plantation sector/commodities, at 6 digit HS 2002 classification, holds true or not. The main findings are as follow. First part, mineral products sector: (a) change in trade volume negative; (b) change in terms of trade positive; (c) combined welfare effects indecisive. Second part: the ex-ante projection of negative impact (a) holds true in case of plantation commodities such as black tea, pepper and palm oil (b) holds false in case of coffee.

The chapter contributes to the existing literature in two ways, one, as an ex-post impact analysis and second, as a verification of the projection of negative impact of the FTA on Indian plantation sector/commodities by the earlier studies.

The chapter is structured as follows. Section 2.2 reviews the existing studies on ASEAN-India FTA. Section 2.3 describes of methodology and data. Section 2.4 provides and analyses the results and section 2.5 concludes the chapter.

2.2. Literature Review

This literature review examines literature on the impact of AIFTA. There is a fair amount of literature on ex-ante studies, whereas ex-post studies are only a few. The differing findings of existing ex-ante studies show positive and negative impact of AIFTA on India, varying across the sectors. Dairy products, fisheries, meat and meat products, minerals, food products, beverages and tobacco, leather and leather products, chemicals, textiles, apparels and accessories, handicrafts and carpets wood and wood products, and medical and pharmaceuticals are sectors likely to gain due to their competitive advantage. Sectors likely to lose due to stiff competition include agricultural products, marine products, auto-components, machinery and appliances, electrical and transport equipment, oil and gas machinery, ferrous metals and coal among others.

One of the sectors projected with negative impact on India recurrently in previous studies is plantation sector/commodities [(Harikumar, 2011); (Sikdar & Nag, 2011); (Francis, 2011); (Harilal, 2010); (Ahmed, 2010); (C Veeramani & Saini, 2012); (Pal & Dasgupta, 2009)]. A shortcoming of this finding is the studies consider all the plantation products that are traded, instead of only those that are covered by the FTA. Under the HS classification at 6-digit the plantation products tea, coffee, natural rubber, pepper, palm oil cover altogether 19 items (see Table 3). But only 7 items are covered by the FTA under Special Products, rest of the items fall under the Exclusion List, hence the results are prone to be non-specific and misleading.

However, according to the literature, the projected benefits of AIFTA on India are contingent on following factors. First, the government's ability to redistribute income from projected sectors of benefits to projected sectors of loss (Pal & Dasgupta, 2009); second, extending liberalization from trade in goods to services and financial markets as a complementary step (Lee, Lee, & Liew, 2007); third, going beyond bilateral integration (ASEAN+India) to multilateral integration (ASEAN+6) for larger benefits (Kawai & Wignaraja, 2007); fourth, the government's ability of to keep negative terms of trade under check and the need to invest in technology to cope with imported high quality intermediate goods (Sikdar & Nag, 2011); fifth, maintaining quality competitiveness (Mondal, Sirohi, & Thorat, 2012).

The literature on AIFTA consists of ex-ante and ex-post studies. Most of the researches are ex ante studies excluding the latter, the remaining studies can be summarized as follows: (a) SMART partial equilibrium model accounts for direct effects of AIFTA in individual markets, such as, dairy products and plantation commodities [(Mondal et al., 2012); (C Veeramani & Saini, 2012)]. But the model ignores indirect effects in other markets⁷ and feedback effects⁸; b) Usage of trade indicators (Deloitte – FICCI, 2011) is limited for two reasons, one, these trade indicators are not backed by theory, two, they offer no answer to broader questions regarding an FTA (Plummer et al., 2011); c) The descriptive analysis based on examination of tariff schedule [(Pal & Dasgupta, 2009); (Harilal, 2010); (Francis, 2011)] do not account for the extent, effectiveness of FTA, for instance, the case where firms choose to ignore the FTA's preference regime due to complicated issues related to rules of origin⁹; d) Whereas, (Ahmed, 2010) and (Sikdar & Nag, 2011) account for the magnitude of the potential effects of AIFTA.

Measuring the impact of FTA alone is not straightforward as several factors contribute to changes in trade volume and growth rate. Also, it's a tedious task to

⁷ Intra-Industry effects

⁸ The effects due to a trade policy change in a particular market that spill over to related markets and return to affect the original market.

⁹ Ibid.

segregate the role of, above listed, various contingent factors in determining the benefits of AIFTA. Thus, this chapter attempts to capture the impact of FTA in isolation using an extrapolation approach. It further employs an adapted version of Lloyd and McLaren (2004) model to account for the welfare effects of AIFTA on Indian mineral products and verifies the projected negative impact on specific plantation commodities covered under the tariff schedule of AIFTA.

2.3. Methodology and Data

The chapter, consisting two parts, measures the impact of AIFTA using an adapted version of Lloyd and McLaren (2004) model (Plummer et al., 2011).

According to Lloyd and McLaren (2004) model, the welfare changes due to RTAs are determined by three terms¹⁰: One, change in trade volume, two, change in intra-union terms of trade and three, extra-union terms of trade, all positively associated with the welfare of a RTA member country (Lloyd & McLaren, 2004).

Before proceeding with the estimation of the welfare effects, a counterfactual is built to segregate the impact of AIFTA from a multitude of other factors determining changes in trade. The counterfactual is a hypothetical estimate that allows trade to grow according to the pre-FTA growth rates. The difference between the actual values and the counterfactual would measure up to AIFTA effect. The counterfactual is built for India's intra-union members, referred as ASEAN, including Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam and India's extra-union members, referred as Non-ASEAN, including China, Hong Kong, Japan, Republic of Korea, Mongolia and Taiwan. India held an average trade share with intra-regional members and extra-regional members of 17.4% and 9.3% respectively during post-AIFTA (2010-14), while the figures stood at 16.6% and 9% during pre-AIFTA period.

The counterfactual is built as follows. First, pre-AIFTA (2005-09) geometric mean annual growth rates of India's export quantities, import quantities, unit value of exports, unit value of imports to ASEAN and Non-ASEAN members are obtained. Second, the AIFTA is in effect since 2010, thus, to extrapolate, India's export quantity, import quantity, unit value of exports and unit value of imports for the year 2009 are multiplied with the corresponding geometric mean annual growth rates over

¹⁰ Expressed in the following form: $\Delta B = +\text{Change in Volume of Trade} + \text{Change in Intra-Union Terms of Trade} + \text{Change in Extra-Union Terms of Trade}$. B is the compensation required to restore the welfare of the country to pre-RTA level. The country gains if ΔB is negative and loses if ΔB is positive.

5 years, that is, post-AIFTA period (2010-14)¹¹. Third, the difference between the actual values and the extrapolated values is the imputed effect of AIFTA.

According to the Lloyd and Maclaren (2004) model, the first term, change in trade volume, should be weighted by border taxes or subsidies in the base period. The border taxes or subsidies indicate difference between domestic and world prices. Thus, changes in India's trade volume are weighted by import-weighted ad valorem effectively applied tariff (AHS) on imports from ASEAN.

An adapted version of the above explained Lloyd and Maclaren (2004) model (Plummer et al., 2011), uses the below formulae:

$\text{Change in Trade Volume} = \sum_{ASEAN} t_{m_{ASEAN}} u_{m_{ASEAN}}^E (m_{ASEAN}^1 - m_{ASEAN}^E) \quad (1)$	
--	--

ASEAN indicates partner country/group; $t_{m_{ASEAN}}$ is the import-weighted ad valorem tariff on imports from partner country ASEAN in the base period 2009; $u_{m_{ASEAN}}^E$ is the extrapolated unit value of imports from partner country ASEAN in the new period; m_{ASEAN}^1 is the actual quantity of imports from partner country ASEAN in the new period; m_{ASEAN}^E is the extrapolated quantity of imports from partner country ASEAN in the new period.

$\begin{aligned} &\text{Change in Terms of Trade} \\ &= \sum_{ASEAN} x_{ASEAN}^E (u_{x_{ASEAN}}^1 - u_{x_{ASEAN}}^E) \\ &\quad - \sum_{ASEAN} m_{ASEAN}^E (u_{m_{ASEAN}}^1 - u_{m_{ASEAN}}^E) \end{aligned} \quad (2)$	
--	--

ASEAN indicates partner country/group; x_{ASEAN}^E is the extrapolated quantity of exports to partner country ASEAN in the new period; $u_{x_{ASEAN}}^1$ is the unit value of exports to partner country ASEAN in the new period; $u_{x_{ASEAN}}^E$ is the extrapolated unit value of exports to partner country ASEAN in the new period; m_{ASEAN}^E is the extrapolated quantity of imports from partner country ASEAN in the new period; $u_{m_{ASEAN}}^1$ is the value of imports from partner country ASEAN in the new period; $u_{m_{ASEAN}}^E$ is the extrapolated unit value of imports from partner country ASEAN in the new period. The change in terms of trade formula is applied to intra-regional members (ASEAN) and extra-regional members (Non-ASEAN) separately.

¹¹ Import quantity = 319931221.66 million*(1+21%)⁵ = 82984932.32 million kgs; Unit Value of Imports = \$0.00008*(1+9.89%)⁵ = \$0.00012; Export quantity = 20910 million* (1+365.25%)⁵ = 45582306.7 million kgs; Unit Value of Exports = \$0.00012*(1+3.58%)⁵ = \$0.00015 (see Table 4.1.2).

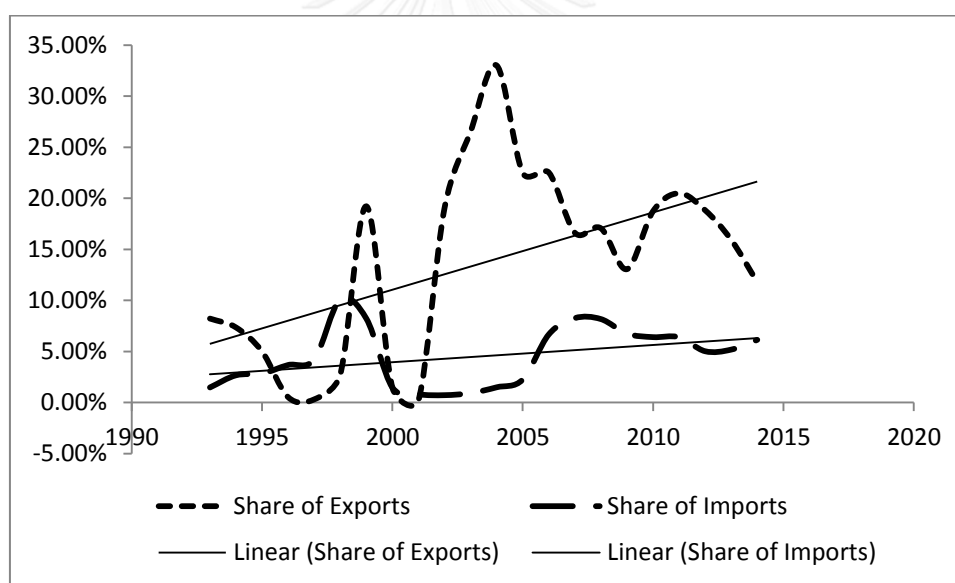
The ex-post impact assessment, adopting the above described methodology, is conducted for each of the two parts, explained below, separately.

2.3.1. Mineral fuels, oils and related products

As per HS 2002 classification, HS 2 digit code 27 - Mineral fuels, mineral oils and related products, is the leading sector of India-ASEAN trade, that is, in terms of Indian exports, imports and total trade with ASEAN in 2014.

Over the two decades, mineral fuels, oils and related products have held a major share in ASEAN-India bilateral trade (see Figure 2.1). During 1993-2003, on an average, ASEAN held 8.23% share of India's exports to the world which increased to 19.13% during 2004-2014. Similarly, ASEAN held 3.37% share of India's imports from the world during 1993-2003 which increased to 5.70% during 2004-2014.

Figure 2. 1 Mineral fuels, oils and related products – Share of ASEAN (in %) in India's Exports to and Imports from the World



Source: Author based on data drawn from UNComtrade via WITS

The assessment of AIFTA impact on HS 2-digit code 27 - mineral fuels, mineral oils and related products, is conducted at HS 4-digit code level within the HS 2-digit category. There are 16 products as specified in Table 2.1.

Table 2. 1 Product Description of Mineral Fuels, Oils and Others as per HS 2002 4-Digit Code Classification

HS Code	Product Description
2701	Coal; briquettes, ovoids and similar solid fuels manufactured from coal.
2702	Lignite, whether or not agglomerated, excluding jet.

2703	Peat (including peat litter), whether or not agglomerated.
2704	Coke and semi-coke of coal, of lignite or of peat, whether or not agglomerated; retort carbon.
2705	Coal gas, water gas, producer gas and similar gases, other than petroleum gases and other gaseous hydrocarbons.
2706	Tar distilled from coal, from lignite or from peat, and other mineral tars, whether or not dehydrated or partially distilled, including reconstituted tars.
2707	Oils and other products of the distillation of high temperature coal tar; similar products in which the weight of the aromatic constituents exceeds that of the non-aromatic constituents.
2708	Pitch and pitch coke, obtained from coal tar or from other mineral tars.
2709	Petroleum oils and oils obtained from bituminous minerals, crude.
2710	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70 % or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic con
2711	Petroleum gases and other gaseous hydrocarbons.
2712	Petroleum jelly; paraffin wax, micro-crystalline petroleum wax, slack wax, ozokerite, lignite wax, peat wax, other mineral waxes, and similar products obtained by synthesis or by other processes, whether or not coloured.
2713	Petroleum coke, petroleum bitumen and other residues of petroleum oils or of oils obtained from bituminous minerals.
2714	Bitumen and asphalt, natural; bituminous or oil shale and tar sands; asphaltites and asphaltic rocks.
2715	Bituminous mixtures based on natural asphalt, on natural bitumen, on petroleum bitumen, on mineral tar or on mineral tar pitch (for example, bituminous mastics, cut-backs).
2716	Electrical energy (optional heading)

Source: UNCTAD Database via WITS.

2.3.2. Plantation commodities

Two reasons for choosing Indian plantation commodities are: first, in previous literature it is the sector recurrently projected with negative impacts; second, a shortcoming of this finding is that the previous literature referred to, takes all the plantation products that are traded, instead of only those that are covered by the FTA. Under the HS 2002 classification at 6-digit code, the plantation products such as tea, coffee, natural rubber, pepper, palm oil consist of altogether 19 tariff lines (see Table 2.2). But only 7 tariff lines are covered by the FTA under Special Products, rest of the items fall under the Exclusion List, hence the results are prone to be non-specific and misleading.

Table 2. 2 Schedule of Plantation Commodities Tariff Commitments: India to ASEAN 5 + CLMV)

HS Code	Product Description
	(a) Tea (4 Items)
090210	Green tea in immediate packings (EL)
090220	Green tea not elsewhere specified (EL)
090230	Black tea (fermented) and partly fermented tea (EL)
090240	Black tea (fermented) and fermented tea (Special Products)

(b) Coffee (7 Items)	
090111	Coffee, not roasted or decaffeinated (Special Products)
090112	Decaffeinated coffee, not roasted (EL)
090121	Roasted coffee, not decaffeinated (EL)
090122	Roasted decaffeinated coffee (EL)
090130	Coffee husks and skins (EL)
090140	Coffee substitutes containing coffee (EL)
210130/2101	Roasted coffee substitutes (incl. chicory) etc. (EL)
(c) Natural Rubber (4 Items)	
400110	Natural rubber latex, in primary forms or in plates (EL)
400121	Smoked sheets of natural rubber (EL)
400122	Technically specified natural rubber, in primary forms (EL)
400129	Other natural rubber, in primary forms or pl. (EL)
(d) Pepper (2 items)	
090411	Dried pepper (excl. crushed or ground) (Special Products)
090412	Pepper crushed or ground (EL)
(e) Palm Oil (2 items)	
151110	Crude palm oil (Special Products)
151190	Palm oil (excl. crude) and liquid fractions (Special Products)

Note: EL – Exclusion List; Source: Taken Schedule of Tariff Commitments Document

Data on trade statistics are sourced from UN Comtrade via World Integrated Trade Solutions (WITS), effectively applied tariff (AHS) sourced from WTO-IDB via WITS. While extrapolating, the missing trade statistics for base year 2009 and new year 2014 were replaced by the nearest preceding year data.

2.4. Results

2.4.1. Mineral fuels, mineral oils and related products

Table 2.3 shows the imputed AIFTA effect on Indian HS Code 27 - Mineral fuels, oils and related products. The commodities under HS Code 27 are analyzed subsequently at 4-digit code. The trade statistics considered for measuring imputed AIFTA effect consist of Indian import quantity, import unit value, export quantity and export unit value.

The extrapolation is conducted based on Indian geometric mean annual growth rates of trade quantities and unit values with ASEAN and Non-ASEAN countries¹² (see Appendix 2.7) for the pre-AIFTA period 2005-09 as shown in Table 2.3.

¹² The results for Non-ASEAN members are not reported in Table 4, Table 5 and Table 6 as the required data is inadequate to conduct the AIFTA impact assessment.

Table 2. 3 India's Actual and Extrapolated Trade Statistics of Mineral Fuels, Oils and Related Products with ASEAN Countries, 2009-2014

Statistics	HS Code	Actual ('000 kg)		Extrapolated ('000 kg)	Imputed AIFTA Effect ('000 kg)
		2009	2014	2014	2014
Import Quantity	2701	31993121656.00	112102625368.00	82984932315	29117693053
	2702	N/A	N/A	N/A	N/A
	2703	N/A	N/A	N/A	N/A
	2704	N/A	21941000.00	N/A	N/A
	2705	N/A	N/A	N/A	N/A
	2706	119900.00	3631000.00	87502.38086	3543497.619
	2707	26777179.00	67840488.00	8649604.886	59190883.11
	2708	N/A	402265.00	N/A	N/A
	2709	2737983944.00	3134196952.00	1926846240	1207350712
	2710	2928881968.00	918819704.00	8629420279	-7710600575
	2711	416272730.00	81501030.00	347789282.5	-266288253
	2712	11850592.00	9691612.00	8056018.893	1635593.107
	2713	275844932.00	145559000.00	445049458.2	-299490458
	2714	26349532.00	543450.00	53840974187	-5.384E+10
	2715	1332906.00	139700.00	2511334.107	-2371634.11
	2716	N/A	N/A	N/A	N/A
Statistics	HS Code	Actual (\$ per kg)		Extrapolated (\$ kg)	Imputed AIFTA Effect(\$ per kg)
		2009	2014	2014	2014
Import Unit Value	2701	0.00008	0.00006	0.00012	-0.00006
	2702	N/A	N/A	0.00000	N/A
	2703	N/A	N/A	0.00000	N/A
	2704	N/A	0.00028	0.00000	0.00028
	2705	N/A	N/A	0.00000	N/A
	2706	0.00071	0.00047	0.00152	-0.00106
	2707	0.00060	0.00114	0.00034	0.00081
	2708		0.00017	0.00000	0.00017
	2709	0.00046	0.00080	0.00035	0.00045
	2710	0.00053	0.00097	0.00037	0.00060
	2711	0.00047	0.00076	0.00045	0.00032
	2712	0.00073	0.00128	0.00068	0.00060
	2713	0.00018	0.00026	0.00017	0.00009
	2714	0.00044	0.00053	0.00060	-0.00006
	2715	0.00046	0.00174	0.00119	0.00055
	2716	N/A	N/A	N/A	N/A
Statistics	HS Code	Actual ('000 kg)		Extrapolated ('000 kg)	Imputed AIFTA Effect ('000 kg)
		2009	2014	2014	2014
Export Quantity	2701	20910000.00	62000.00	45582306687	-45582244687
	2702	N/A	75000.00	16821572.65	-16746572.65
	2703	N/A	60000000.00	N/A	N/A
	2704	N/A	208000.00	89552.18	118447.8143
	2705	11100000.00	N/A	22617297.49	N/A
	2706	3201876.00	27000.00	10668394.34	-10641394.34
	2707	90767210.00	6039264.00	1918354993	-1912315729
	2708	7807705.00	18514000.00	4030565818	-4012051818
	2709	5250515.00	N/A	10116440.15	N/A
	2710	6022866210.00	8920756721.00	6405537336	2515219385
	2711	812.00	200.00	0.025604707	199.9743953
	2712	2661319.00	1480148.00	6750831.645	-5270683.65

	2713	30651583.00	63805134.00	54190656.37	9614477.63
	2714	N/A	6350000.00	N/A	N/A
	2715	10415.00	N/A	N/A	N/A
	2716	N/A	900.00	N/A	N/A
Statistics	HS Code	Actual (\$ per kg)		Extrapolated (\$ per kg)	Imputed AIFTA Effect(\$ per kg)
		2009	2014	2014	2014
Export Unit Value	2701	0.00012	0.00039	0.00015	0.00024
	2702	N/A	0.00187	0.00000	0.00187
	2703	N/A	N/A	N/A	N/A
	2704	N/A	0.00031	1.42501	-1.42470
	2705	0.00058	N/A	0.00088	N/A
	2706	0.00053	0.00098	0.00120	-0.00023
	2707	0.00051	0.00122	0.00178	-0.00056
	2708	0.00128	0.00063	0.02080	-0.02018
	2709	0.00039	N/A	N/A	N/A
	2710	0.00051	0.00082	0.00069	0.00013
	2711	0.00097	0.00425	0.00071	0.00353
	2712	0.00091	0.00216	0.00120	0.00096
	2713	0.00043	0.00038	0.00101	-0.00063
	2714	N/A	0.00056	N/A	N/A
	2715	0.00089	0.00088	0.00153	-0.00066
	2716	N/A	0.00297	N/A	N/A

Source: Author's calculations using data from the UN Comtrade via WITS

Table 2.4 shows the welfare effects of AIFTA on Indian mineral fuels, oils and related products. The welfare effects captured in terms of change in trade volume and change in terms of trade for each of the 16 products at 4-digit HS code. The change in trade volume is \$-2933.43 million. The change in intra union terms of trade is \$692.05 million. Accordingly, the combined welfare effects of AIFTA on Indian mineral fuels, oils and related products is \$-2241.38 million. However, the negative combined welfare effect estimation is incomplete as the change in extra union terms of trade is unavailable due to data inadequacy. Thus, the results are indecisive.

Table 2. 4 Welfare Effects of ASEAN India Free Trade Agreement on India's Mineral Fuels, Oils and Related Products, 2009-2014

HS Code	Product Description	Change in Trade Volume (in '000 US\$)	Change in Intra-Union Terms of Trade (in '000 US\$)
2701	Coal; briquettes, ovoids and similar solid fuels manufactured from coal	363131.77	1924506.5
2702	Lignite, whether or not agglomerated, excluding jet	N/A	N/A
2703	Peat (including peat litter), whether or not agglomerated	N/A	N/A
2704	Coke and semi-coke of coal, of lignite or of peat, whether or not agglomerated; retort carbon	N/A	N/A
2705	Coal gas, water gas, producer gas and similar gases, other than petroleum gases and other gaseous hydrocarbons	N/A	N/A
2706	Tar distilled from coal, from lignite or from peat, and other mineral tars, whether or not dehydrated or partially distilled, including reconstituted tars	540.01	-597.13
2707	Oils and other products of the distillation of high temperature coal tar; similar products in which the weight of the aromatic constituents exceeds	1983.52	-72259.48

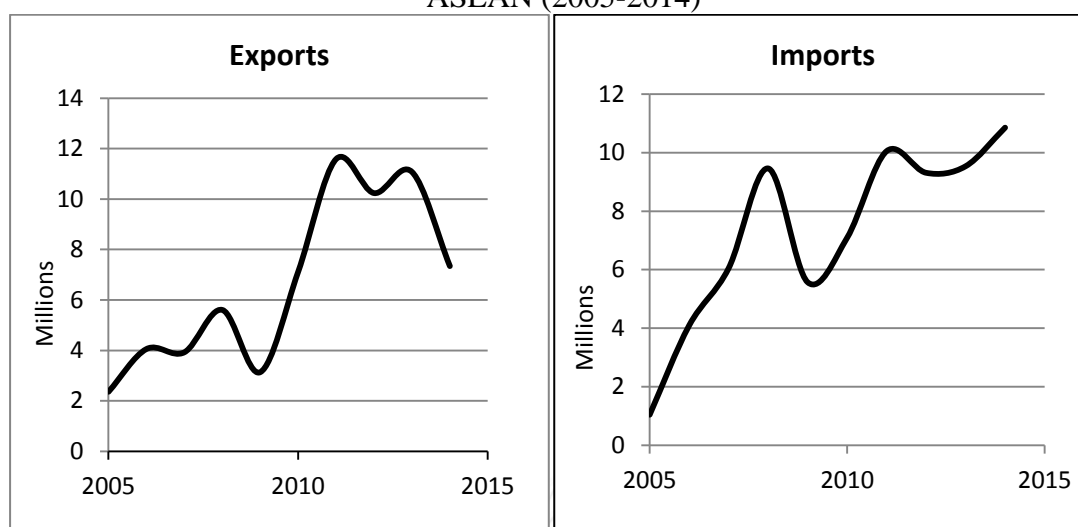
	that of the non-aromatic constituents.		
2708	Pitch and pitch coke, obtained from coal tar or from other mineral tars.	N/A	N/A
2709	Petroleum oils and oils obtained from bituminous minerals, crude.	214218.67	N/A
2710	Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70 % or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic con	- 286944.10	- 977596.75
2711	Petroleum gases and other gaseous hydrocarbons.	-11915.49	- 131340.52
2712	Petroleum jelly; paraffin wax, micro-crystalline petroleum wax, slack wax, ozokerite, lignite wax, peat wax, other mineral waxes, and similar products obtained by synthesis or by other processes, whether or not coloured.	111.47	-4509.38
2713	Petroleum coke, petroleum bitumen and other residues of petroleum oils or of oils obtained from bituminous minerals.	-5025.89	-45407.96
2714	Bitumen and asphalt, natural; bituminous or oil shale and tar sands; asphaltites and asphaltic rocks.	-3209251	N/A
2715	Bituminous mixtures based on natural asphalt, on natural bitumen, on petroleum bitumen, on mineral tar or on mineral tar pitch (for example, bituminous mastics, cut-backs).	-282.83	-740.77
2716	Electrical energy	N/A	N/A
	Total	-2933434	692054.54

Source: Author's calculations using data from the UN Comtrade via WITS. Note 1: Results for extra-union (Non-ASEAN) terms of trade are not reported as the data required for the estimation are inadequate.

In the previous studies Indian minerals sector is projected to gain due to its competitive advantage (Sikdar & Nag, 2011). Mineral fuels, oils and related products, being the leading sector, have consistently held an average share of Indian exports of about 27% and 31% during pre-AIFTA (2005-09) and post-AIFTA (2010-14), respectively, whereas, the share of Indian imports stood at 26% and 25%, respectively. According to the results the trade volume declined and terms of trade with ASEAN deteriorated significantly post-AIFTA. Possible explanations include already low tariffs in the region due to AFTA, the rise in export taxes and subsidies which the chapter assumes to be absent, ongoing recession having adverse impact on trade flows and successive reduction in import tariffs might have encouraged introduction of range of non-tariff measures.

A critical factor influencing the results is the base year 2009. The quantities of base year 2009 are used to build a counterfactual of trade evolving according to the pre-AIFTA trend. 2009 being a year of recession when the exports and imports fell sharply, recovering thereupon (see Figure 2.2 and 2.3) might have caused an upward bias in the estimation.

Figure 2. 2 Trade Growth Trends in India's Minerals Fuels, Oils and Related with ASEAN (2005-2014)



Source: Based on data from UN Comtrade via WITS.

2.4.2. Plantation commodities

Similarly, Table 2.5 shows the imputed AIFTA effect on Indian plantation commodities at 6-digit code as per HS 2002 classification. The extrapolation of trade statistics, viz. Indian import quantity, import unit value, export quantity and export unit value of plantation commodities is conducted based on Indian geometric mean annual growth rates of trade quantities and unit values (see Appendix 2.8) with ASEAN and Non-ASEAN countries for the pre-AIFTA period 2005-09 as shown in Table 2.5.

Table 2. 5 India's Actual and Extrapolated Plantation Commodity Trade Statistics with ASEAN and Non-ASEAN Countries, 2009-2014

Partner Country		ASEAN members		Non-ASEAN members	
Product		090111 – Coffee, not decaffeinated			
Year		2009	2014	2009	2014
Import Quantity	Actual ('000 kg)	29304689.00	59503940	N/A	N/A
	Ext. ('000 kg)	.....	18745788.89	.....	N/A
	Imputed AIFTA effect ('000 kg)	.....	40758151.11	.....	N/A
Import Unit Value	Actual (\$ per kg)	0.00159	0.00192	N/A	N/A
	Ext. (\$ per kg)	.....	0.00309	.....	N/A
	Imputed AIFTA effect ('000 kg)	.....	(0.00117)	.....	N/A
Export Quantity	Actual ('000 kg)	758883.00	153465.00	779082.00	4872732.00
	Ext. ('000 kg)	.....	2503500.47	.....	74127.72
	Imputed AIFTA effect ('000 kg)	.....	(2350035.47)	.....	4798604.27
Export Unit Value	Actual (\$ per kg)	0.00284	0.00358	0.00229	0.00305

	Ext. (\$ per kg)	.....	0.00289	.....	0.00309
	Imputed AIFTA effect ('000 kg)	.....	0.00069	.....	(0.00003)
Product	090240 - Other black tea (fermented) and other partly fermented tea				
Year		2009	2014	2009	2014
Import Quantity	Actual ('000 kg)	9256023.00	1244422	78949.00	59689.00
	Ext. ('000 kg)	.....	21220286.66	.....	6050.50
	Imputed AIFTA effect ('000 kg)	.....	(19975864.66)	.....	53638.50
Import Unit Value	Actual (\$ per kg)	0.00134	0.00169	0.00249	0.00634
	Ext. (\$ per kg)	.....	0.00184	.....	0.01014
	Imputed AIFTA effect ('000 kg)	.....	(0.00015)	.....	(0.00380)
Export Quantity	Actual ('000 kg)	950595.00	4016962.00	2625918.00	7048326.00
	Ext. ('000 kg)	.....	1171294.36	.....	2447244.97
	Imputed AIFTA effect ('000 kg)	.....	2845667.64	.....	4601081.03
Export Unit Value	Actual (\$ per kg)	0.00249	0.00205	0.00447	0.00474
	Ext. (\$ per kg)	.....	0.00347	.....	0.00489
	Imputed AIFTA effect ('000 kg)	.....	(0.00142)	.....	(0.00016)
Product	090411 - Pepper, neither crushed nor ground				
Year		2009	2014	2009	2014
Import Quantity	Actual ('000 kg)	11846684.00	17288716	36827.00	2722.00
	Ext. ('000 kg)	.....	11834047.39	.....	1268526.67
	Imputed AIFTA effect ('000 kg)	.....	5454668.61	.....	(1265804.67)
Import Unit Value	Actual (\$ per kg)	0.00238	0.00731	0.00269	0.01958
	Ext. (\$ per kg)	.....	0.00498	.....	0.00227
	Imputed AIFTA effect ('000 kg)	.....	0.00233	.....	0.01731
Export Quantity	Actual ('000 kg)	952449.00	1132400.00	601881.00	604869.00
	Ext. ('000 kg)	.....	4892893.25	.....	617380.55
	Imputed AIFTA effect ('000 kg)	.....	(3760493.25)	.....	(12511.55)
Export Unit Value	Actual (\$ per kg)	0.00262	0.00385	0.00307	0.01159
	Ext. (\$ per kg)	.....	0.00435	.....	0.00496
	Imputed AIFTA effect ('000 kg)	.....	(0.00050)	.....	0.00664
Product	151110 - Crude Palm Oil				
Year		2009	2014	2009	2014
Import Quantity	Actual ('000 kg)	4740261576.0 0	6474615272	N/A	N/A
	Ext. ('000 kg)	.....	13929700920	.....	N/A
	Imputed AIFTA effect ('000 kg)	.....	(7455085648)	.....	N/A
Import Unit Value	Actual (\$ per kg)	0.00058	0.00082	N/A	N/A
	Ext. (\$ per kg)	.....	0.00088	.....	N/A
	Imputed AIFTA effect ('000 kg)	.....	(0.00006)	.....	N/A
Export Quantity	Actual ('000 kg)	N/A	N/A	N/A	N/A

	Ext. ('000 kg)	.....	N/A	.....	N/A
	Imputed AIFTA effect ('000 kg)	.....	N/A	.....	N/A
Export Unit Value	Actual (\$ per kg)	N/A	N/A	N/A	N/A
	Ext. (\$ per kg)	.....	N/A	.....	N/A
	Imputed AIFTA effect ('000 kg)	.....	N/A	.....	N/A
Product	151190 – Palm Oil, other				
Year		2009	2014	2009	2014
Import Quantity	Actual ('000 kg)	1222578618.0 0	1433290096	N/A	N/A
	Ext. ('000 kg)	.....	1533420540	.....	N/A
	Imputed AIFTA effect ('000 kg)	.....	(100130443.9)	.....	N/A
Import Unit Value	Actual (\$ per kg)	0.00061	0.00085	N/A	N/A
	Ext. (\$ per kg)	.....	0.00091	.....	N/A
	Imputed AIFTA effect ('000 kg)	.....	(0.00007)	.....	N/A
Export Quantity	Actual ('000 kg)	2300.00	10050.00	N/A	N/A
	Ext. ('000 kg)	.....	1293.94	.....	N/A
	Imputed AIFTA effect ('000 kg)	.....	8756.06	.....	N/A
Export Unit Value	Actual (\$ per kg)	N/A	N/A	N/A	N/A
	Ext. (\$ per kg)	.....	N/A	.....	N/A
	Imputed AIFTA effect ('000 kg)	.....	N/A	.....	N/A

Source: Author's calculations using data from the UN Comtrade via WITS.

Note 1: “()” = Negative numbers; Note 2: = Not Applicable; Note 3: Data Not Available.

Table 2.6 shows the intra-bloc and extra-bloc welfare effects of AIFTA on Indian plantation commodities. The change in trade volume with ASEAN is positive in case of (a) Coffee: \$1.64 million and (b) Pepper: \$0.15 million and negative in case of (c) Other Black Tea: \$-0.13 million; (d) Crude Palm Oil: \$-4031.89 million and (e) Palm Oil, Other: \$-17.19 million. The change in terms of trade with ASEAN (intra-bloc) is positive in case of (a) Coffee: \$34.91 million and (b) Palm Oil, Other: \$83.29 million and is negative in case of (c) Other Black Tea: \$-0.01 million and (d) Pepper: \$-28.06 million. The change in terms of trade with Non-ASEAN (extra-bloc) is positive in case of (a) Pepper: \$3.36 million and is negative in case of (b) Coffee: \$-0.11 million.

The combined welfare effects of AIFTA on Indian plantation commodities are positive in case of (a) Coffee: \$36.43 million and is negative in case of (b) Other Black Tea: \$-0.14 million; (c) Pepper: \$-24.55 million; (d) Crude Palm Oil: \$-4031.89 million; (e) Palm Oil, Other: \$-17.19 million.

Table 2. 6Intra-Bloc and Extra-Bloc Welfare Effects of ASEAN-India Free Trade Agreement on Indian Plantation Commodities, 2009-2014

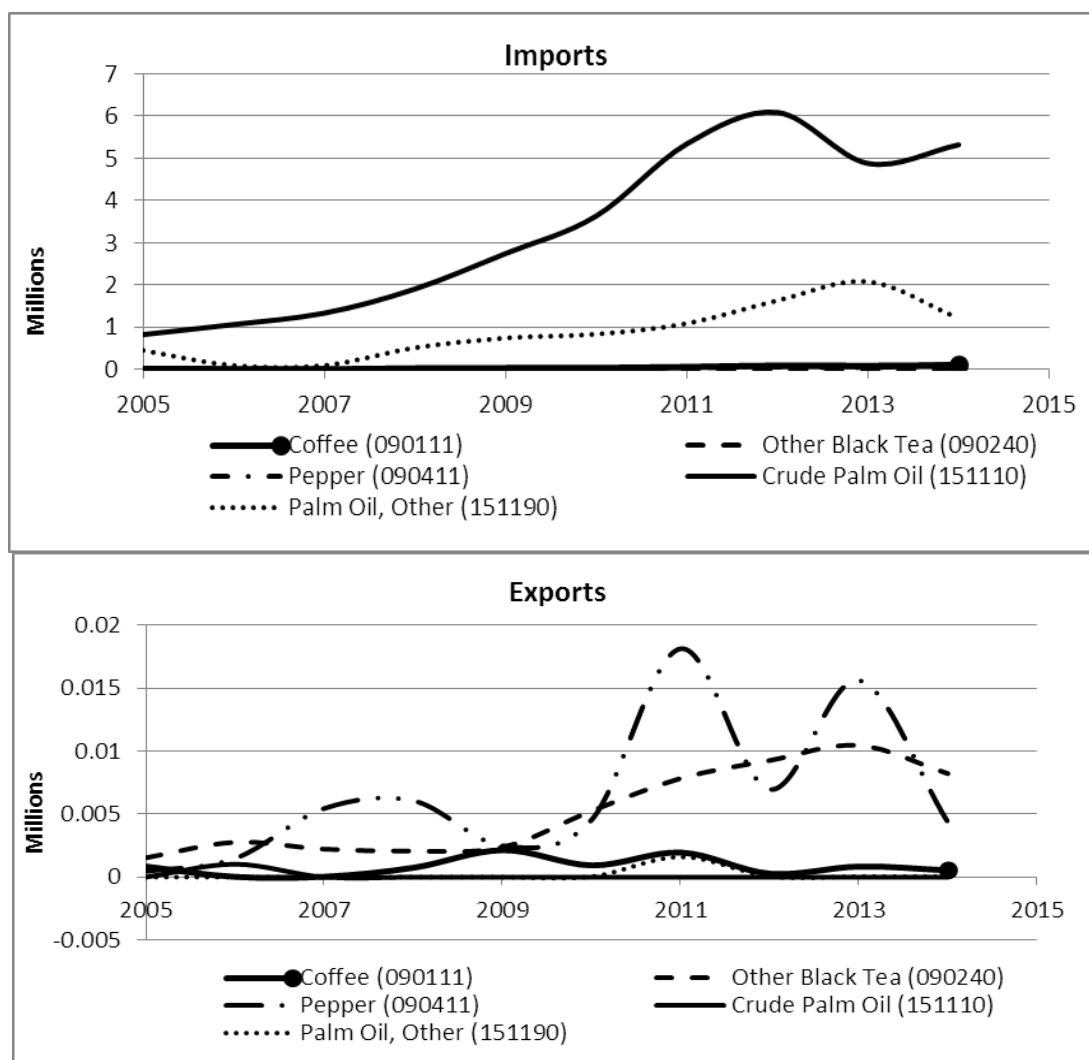
Product Code	090111	090240	090411	151110	151190
Product Description	Coffee, not decaffeinated	Other black tea (fermented) and other partly fermented tea	Pepper, neither crushed nor ground	Crude Palm Oil	Palm Oil, other
	Change in Trade Volume (in 1000 US\$)				
Asean	1638.89	-127.31	149.91	-4031887.976	-17191.31
	Change in Terms of Trade (in 1000 US\$)				
Asean (Intra-Bloc)	34906.70	-10.22	-28056.99	N/A	83286.28
Non-Asean (Extra-Bloc)	-111.48	N/A	3358.29	N/A	N/A
	Combined Welfare Effects of Changes in Trade Volume and Terms of Trade (in 1000 US\$)				
	36434.11	-137.53	-24548.79	-4031887.976	-17191.31

Source: Author's calculations using data from UN Comtrade via WITS.

Thus, according to the results, the ex-ante projection of negative impact on plantation commodities by previous studies holds true in case of (a) Other Black Tea; (b) Pepper; (c) Crude Palm Oil; (d) Palm Oil and holds false in case of (e) Coffee.

The following two points put the negative impact of AIFTA in perspective. One, from a market size point of view India has a huge domestic market whereas that of ASEAN countries is relatively small. Thus, major share of production of these commodities is consumed domestically in India and while it is exported to international markets in ASEAN countries (Joseph, 2011). Two, in comparison to India, ASEAN member countries' output and productivity is much higher, for instance, the productivity of pepper is 380 kilograms per hectare in India while it is 1,000 kilograms per hectare in Vietnam and 3,000 kilograms per hectare in Indonesia (Devraj, 2009).

Figure 2. 3 Trade Growth Trends in Indian Plantation Commodities with ASEAN (2005-14)



Source: Based on UNCOMTRADE data via WITS

2.5. Conclusion

The main findings of the ex-post impact assessment of ASEAN-India Free Trade Agreement on Indian mineral products and plantation commodities are as follows. First, mineral fuels, oils and related products: (a) change in trade volume negative; (b) change in terms of terms of trade positive; (c) combined welfare effects indecisive. Second, plantation commodities: the ex-ante projection of negative impact (a) holds true in case of plantation commodities such as black tea, pepper and palm oil while (b) holds false in case of coffee.

The findings are consistent with the general trend of growing imports coupled with sluggish exports of India which has significantly increased 2008-09 onwards. The

balance of trade in the Asian region has been consistently negative especially since 2005 with North East Asia and ASEAN countries. Though trade among countries of the South increased due global financial crisis, decreasing demand in the Euro Zone, the share of Indian trade has grown relatively slow in comparison to other South and South East Asian countries (GOI, 2012-13).

The industry specific findings of the chapter reflect on India's domestic unpreparedness to handle the host of challenges that FTAs bring in. Tariffs form a part of the range of trade barriers. Inefficient policies, limited coverage of non-tariff measures in the ASEAN-India FTA, poor infrastructure, and technological differences are contributing to the export uncompetitiveness. At the same time, though cheaper imports are contributing to consumer welfare, the quality differences between the domestic and imported goods are affecting the overall welfare.

Besides the above long-term measures, the absence of bilateral cooperative assistance mechanisms for sectors likely to face stiff competition or adverse impact, export promotion schemes on par with international standards and improved facilitation measures for higher and efficient utilization of the FTA are some of the immediate steps towards reaping the benefits of the FTA.

Chapter 3: India's Intra-Industry Trade in Manufactures with ASEAN – An Empirical Assessment

3.1. Introduction

Bilateral trade in manufactures between India and the Association of South East Asian Nations (ASEAN) increased at a compound annual growth rate (CAGR) of 16% and 19% during 1993-2003 and 2003-2013, respectively. Whereas the CAGR registered with the world was 11% and 17%. However, the growth patterns and the determinants of India's share of intra-industry trade (IIT) in manufactures with ASEAN remain uninvestigated in previous research works. Intra-industry trade refers to simultaneous export and import of similar goods. IIT in differentiated products takes place as a result of consumers' preferences for variety and increasing economies of scale (Helpman & Krugman, 1985).

The main purpose of this paper is to contribute an empirical assessment of India's IIT in manufactures with ASEAN over two decades (1993-2013). The twin objectives of the paper are to examine the patterns and to assess the determinants of India's IIT in manufactures with the six economies of ASEAN, viz., Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam.

It is important from an economic and policy point of view to have an empirical understanding of the evolving India-ASEAN IIT. The questions this paper attempts to answer are: What is the nature of this significant growth in India-ASEAN merchandise trade over the past two decades? What change, if any, can be observed in product composition? Did the technology gap shrink? What was the impact of the ASEAN-India Free Trade Agreement (AIFTA) on IIT?

The broader findings of the paper are: (a) No set patterns in India's IIT in manufactures with individual ASEAN countries; (b) There are significant variations in the observed patterns and determinants of India's bilateral IIT with the six ASEAN member countries and they vary among the four product groups.

The paper is structured as follows. Section 2 reviews the previous works on IIT in India and ASEAN countries. Section 3 examines the patterns in IIT in manufacturing sectors 5, 6, 7 and 8 (SITC Revision 3) by constructing Grubel Lloyd Index (GLI) at 3-digit level. The determinants of India's IIT with six ASEAN countries are obtained using Random-Effects Generalized Least Squares (GLS) regression, separately. Section 4 presents and discusses the empirical results, and conclusion in Section 5.

3.2. Literature Review

Previous empirical literature on bilateral trade between India and ASEAN countries are sparse. Among them, studies particularly addressing bilateral IIT are nil. This paper is the first to exclusively examine the hitherto uninvestigated India's IIT in manufactures with individual ASEAN countries over two decades. The analysis juxtaposes six country pairs within a single frame, enabling an emphasis on the contrasts across six diverse ASEAN countries.

The growth trends in India's IIT with ASEAN countries are to be analyzed with reference to the key characteristics. First, India and ASEAN countries, excluding Singapore, are developing economies. Second, the scale and size of manufacturing vary among these countries. Third, the ASEAN-India economic integration is not deep enough, in that, the coverage of policies and institutions is limited.

Findings from earlier literature on evidences of increasing IIT in India's manufacturing can be summarized as follows. First, India's IIT in manufactures is more with developed countries than with developing countries [(G. G. Das, 2005); (Choorikkad Veeramani, 2002)]. These empirical evidences are, thus, inconsistent with the observation that IIT in developing countries is more with each other than with the less similar industrial countries (Havrylyshyn & Civan, 1985). Second, trade liberalization in 1991 led to higher levels of IIT in India (Choorikkad Veeramani, 2002). Third, the dynamic effects of free trade agreements (FTAs) include actuation of economies of scale and variety in the long-term (Plummer et al., 2011). Thus, under Regional Comprehensive Economic Partnership (RCEP), a proposed ASEAN+6 FTA under negotiation can stimulate and sustain IIT in the region, specifically with India's active presence and deeper integration in the region (R. U. Das & Dubey, 2014). Fourth, IIT intensity is higher in manufacturing industries with greater scope for product differentiation (Choorikkad Veeramani, 2007).

Most of bilateral IIT between China and India in 2003 occurred in manufacturing sectors 5, 6 and 7 (Wu & Zhou, 2006). In 2003, among 22 Asian countries highest levels of IIT was observed in ASEAN and high-income countries of East Asia, followed by China and India, particularly in manufacturing sectors (Sawyer, Sprinkle, & Tochkov, 2010). Evidences show that IIT and regional economic integration mutually reinforce each other. For instance, IIT promoted economic integration within East Asia and among ASEAN countries [(Cortinhas, 2007); (Sohn & Zhang, 2005)]. The ASEAN Free Trade Area (AFTA) promoted IIT across all categories of goods (Sawyer et al., 2010).

3.3. Methodology and Data

3.3.1. Patterns of India's IIT in Manufactures with ASEAN, 1993-2013

The paper focuses on analysis of IIT in manufactures. Accordingly, product groups 5, 6, 7 and 8 covering manufactured goods as per Standard International Trade Classification (SITC) Revision 3 (see Table 3.1) are considered.

Table 3. 1Major categories of the SITC Revision 3 classification system

Product Group	Product Description
0	Food and live animals
1	Beverages and tobacco
2	Crude materials, inedible, except fuels
3	Mineral fuels, lubricants and related materials
4	Animals and vegetables oils, fats and waxes
5	Chemicals and related products
6	Manufactured goods classified chiefly by materials
7	Machinery and transport equipment
8	Miscellaneous manufactured articles
9	Commodities and transactions not classified elsewhere in the SITC

The paper uses Grubel-Lloyd Index (GLI) to measure the level and analyze the patterns of India's IIT in manufactures with six ASEAN countries over two decades (1993-2013), treating each country pair separately. The GLI is given by

$$GLI_k = 1 - \frac{|X_k - M_k|}{X_k + M_k} \quad (1)$$

where X_k = exports of product group k and M_k = imports of product group k. The value of GLI lies between 0 (pure inter-industry trade) and 1 (pure intra-industry trade).

Since the GLI is prone to aggregation bias (Milner and Greenaway, 1987), the extensively used 3-digit level aggregation is chosen to analyze the patterns of IIT. At 3 digit level, product group 5 – Chemicals and related products, 6 - Manufactured goods classified chiefly by materials, 7 – Machinery and transport equipment and 8 – Miscellaneous manufactured articles, consist of 33, 52, 50 and 31 groups, respectively, adding up to altogether 166 groups. The six country pairs are India-Indonesia (IDN), India-Malaysia (MYS), India-Philippines (PHL), India-Singapore (SGP), India-Thailand (THA) and India-Vietnam (VNM). Each pair consists of 3486 observations. Thus, the dataset includes a total of 20,916 observations over 21 years.

3.3.2. Determinants of India's IIT in Manufactures with ASEAN, 1993-2013

To assess the determinants of India's IIT in manufactures with the six ASEAN countries individually, the following random-effects generalized least squares (GLS) regression model is estimated for each of the six country pairs, separately, as shown below.

$\text{IIT}_{\text{India,IND},t} = \beta_0 + \beta_1 \text{DGDP} + \beta_2 \text{DPCGDP} + \beta_3 \text{R\&D} + \beta_4 \text{SMT} + \beta_5 \text{AIFTA} + u_i \quad (2)$	
---	--

$\text{IIT}_{\text{India,MYS},t} = \beta_0 + \beta_1 \text{DGDP} + \beta_2 \text{DPCGDP} + \beta_3 \text{R\&D} + \beta_4 \text{SMT} + \beta_5 \text{AIFTA} + u_i \quad (3)$	
---	--

$\text{IIT}_{\text{India,PHL},t} = \beta_0 + \beta_1 \text{DGDP} + \beta_2 \text{DPCGDP} + \beta_3 \text{R\&D} + \beta_4 \text{SMT} + \beta_5 \text{AIFTA} + u_i \quad (4)$	
---	--

$\text{IIT}_{\text{India,SGP},t} = \beta_0 + \beta_1 \text{DGDP} + \beta_2 \text{DPCGDP} + \beta_3 \text{R\&D} + \beta_4 \text{SMT} + \beta_5 \text{AIFTA} + u_i \quad (5)$	
---	--

$\text{IIT}_{\text{India,THA},t} = \beta_0 + \beta_1 \text{DGDP} + \beta_2 \text{DPCGDP} + \beta_3 \text{R\&D} + \beta_4 \text{SMT} + \beta_5 \text{AIFTA} + u_i \quad (6)$	
---	--

$IIT_{India,VNM,t} = \beta_0 + \beta_1 DGDP + \beta_2 DPCGDP + \beta_3 R\&D + \beta_4 SMT + \beta_5 AIFTA + u_i \quad (7)$	
--	--

where the dependent variable is India's IIT in manufactures. IDN, MYS, PHL, SGP, THA and VNM stand for Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam respectively. The time period 1993-2013 is represented by 't'.

The independent variables DGDP and DPCGDP stand for difference in GDP and per capita GDP. DGDP and DPCGDP are the proxy for market size and level of economic development, respectively, of India and the ASEAN member country under consideration. The more similar the trading partners are in terms of market size and level of economic development, the higher the extent of IIT between them (Helpman & Krugman, 1985). Larger markets, with potential for economies of scale, enable production of differentiated goods. Whereas similar level of economic development facilitate and create demand for differentiated goods, driven by consumers' love of variety (Krugman, 1979) and the individual preferences for particular variety (Lancaster, 1980).

The difference in GDP and PCGDP is captured by the relative inequality measure (Balassa, 1986b) as shown below:

$Ineq_GDP = 1 + \frac{[w \ln(w) + (1-w) \ln(1-w)]}{\ln 2}$	(8)
---	-----

Where

$$w = GDP_i / (GDP_i + GDP_j)$$

i and *j* are India and ASEAN member country under consideration.

Similarly,

$Ineq_PCGDP = 1 + \frac{[w \ln(w) + (1-w) \ln(1-w)]}{\ln 2}$	(9)
---	-----

where

$$w = PCGDP_i / PCGDP_i + PCGDP_j$$

i and j are India and ASEAN member country under consideration.

The value of the measure lies between 0 and 1. The relative inequality increasing as the value tends towards 1. Thus, a negative relationship is expected between the dependent variable IIT and the independent variables inequality in GDP (DGDP) and per capita GDP (DPCGDP).

Technological similarity among trading partners leads to higher levels of IIT (Broll & Gilroy, 1988). Technological similarity in manufacturing shows in the level of R&D intensity. R&D intensity controls degree of product differentiation. In the regression specification, total trade in high technology products is used as a proxy for R&D intensity, thus, a positive relationship is expected between the two. The extent of IIT is relatively higher in manufactured product categories (OECD, 2002).

The scope for product differentiation is relatively higher in manufactured goods. Thus, the share of merchandise trade is used as an independent variable and a positive association with IIT is expected. ASEAN-India Free Trade Agreement (AIFTA) is used as a proxy for regional integration. As regional integration facilitates successive reduction in tariff and non-tariff barriers, the trade costs tend to be low. Thus, AIFTA is expected to be positively associated with IIT.

To treat the problems of heteroscedasticity and autocorrelation in the panel data, the paper uses both the fixed effects and the random-effects models. The coefficients obtained in each of the models show negligible difference (see Appendix 3.4 for results of fixed-effects model). Due to the efficiency of random-effects model over fixed-effects model, the former is chosen to estimate the determinants of IIT.

The panel data for 21 years (1993-2013) is used for the regression. In that, 166 product groups as cross-section units at 3-digit level of SITC Rev. 3 are studied over a 21 time-series units. The export and import data to calculate GLI, share of merchandise trade, share of high-technology products are obtained from UN Comtrade database via World Integrated Trade Solutions (WITS). The description of high technology products follows the list given by (Hatzichronoglou, 1997). The data for GDP, per capita GDP are obtained from UNCTAD database. AIFTA is represented by dummies, that is, 0 for years prior to AIFTA (1993-2009) and 1 for years since AIFTA came into effect (2009-2013).

3.4. Results

3.4.1. The Patterns

Figure 3.1 shows the patterns in India's IIT with six ASEAN countries in four product groups under manufacturing sector (SITC Revision 3). The four product groups, at 2-digit level, are described as follows: Product Code 5 – Chemicals and related products such as organic and inorganic chemicals, dyeing, tanning and coloring materials, medicinal and pharmaceutical products, essential oils, plastics; Product Code 6 - Manufactured goods classified chiefly by materials such as leather, rubber, cork and wood manufactures, paper and related articles, textiles, non-metallic minerals, iron and steel, non-ferrous metals; Product Code 7 – Machinery and transport equipment such as power generating, metalworking, general industrial and electrical machinery, telecommunications and related equipment, road vehicles; Product Code 8 – Miscellaneous manufactured articles such as prefabricated buildings, furniture, travel goods, footwear, professional and scientific instruments, photographic apparatus among others.

Table 3. 2 Compound Annual Growth Rates (in %) of India's Average Trade-Weighted Intra-Industry Trade in Manufactures with ASEAN, 1993-2013

Manufactures Product Code (SITC Rev.3)	IDN		MYS		PHL	
	1993-03	2003-13	1993-03	2003-13	1993-03	2003-13
5	(1.12)	(1.37)	(4.50)	4.80	13.36	(8.13)
6	0.19	0.95	2.94	2.88	22.24	(4.10)
7	31.84	(1.10)	(7.42)	5.43	16.15	0.41
8	12.54	7.61	3.30	1.93	(0.93)	4.06
	SGP		THA		VNM	
	1993-03	2003-13	1993-03	2003-13	1993-03	2003-13
5	(3.03)	(1.32)	3.60	(3.25)	10.85	27.37
6	2.31	1.70	11.64	3.25	0.16*	21.83
7	(10.62)	15.82	2.53	(0.40)	69.69*	(4.82)
8	0.94	(0.08)	5.79	(1.59)	50.97	0.68

Source: Author's calculations using data from the UN Comtrade via WITS; Note 1: *CAGRs are for 1994-03 and 1997-03 respectively; Note 2: “()” = Negative number; Note 3: Product Code 5 – Chemicals and related products; Product Code 6 - Manufactured goods classified chiefly by materials; Product Code 7 – Machinery and transport equipment; Product Code 8 – Miscellaneous manufactured articles.

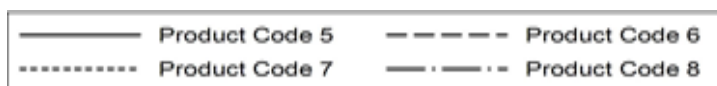
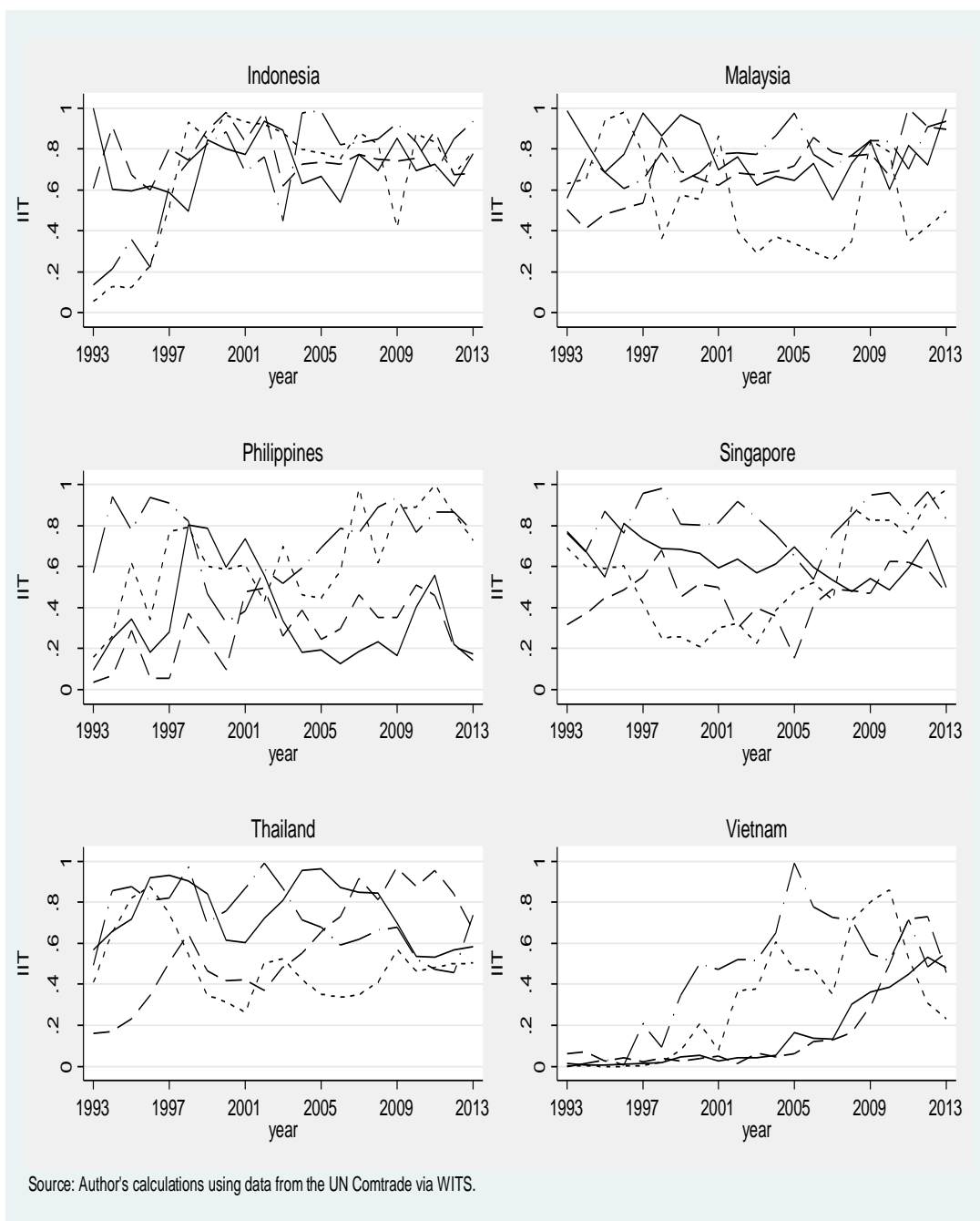
An explanation of Figure 3.1 can be drawn from comparison of compound annual growth rate (CAGR) of India's average trade-weighted IIT with six ASEAN member countries between 1993-03 and 2003-13 as shown in Table 3.2. It can be observed (a) Product group 5: the CAGR decreased in case of all except MYS and VNM. (b) Product group 6: the CAGR decreased in case of all except IDN and VNM. (c) Product group 7: the CAGR decreased in case of all except MYS and SGP. (d)

Product group 8: the CAGR decreased in case of all except PHL. The variation in growth patterns is inconsistent and idiosyncratic across six ASEAN member countries.

During 1993-2003 Indian exports of manufactured goods to ASEAN were dominated by resource based and intermediate goods, whereas, imports from ASEAN were dominated by capital goods. However, evidently, since 2003 the product composition has been changing with a considerable growth in India's export share of capital goods. For instance, in 2013, Indian exports were led by capital goods such as machinery and transport equipment in case of PHL (45.33%), SGP (54.37%) and IDN (33.87%). Whereas resource based goods such as leather, rubber, cork and wood, paper and related articles, textiles, non-metallic minerals, iron and steel, non-ferrous metals among others held a major share of Indian exports to MYS (36.71%), THA (55.60%) and VNM (52.90%). Indian imports, in 2013, from all six countries, as usual, were dominated by machinery and transport equipment. The shares of IDN, MYS, PHL, SGP, THA and VNM stood at 35.72, 51.09, 79.65, 47.26, 48.34 and 77.24 percent, respectively.

These trends suggest that traditional trade pattern continues in product groups 5 – chemicals and related products and 6 - manufactured goods classified by materials. However, the visible increase in simultaneous exports and imports in product group 7 - machinery and transport equipment, thus, indicates a shift from trade driven by comparative advantage specialization to that of economies of scale, though at a slower rate. Second, as the trading partners become technologically similar, IIT improves and vice-versa (Broll & Gilroy, 1988). India's technological standards differ from that of ASEAN member countries. The technological dissimilarity is implied by the share of medium and high-tech activities in manufacturing export since 1990 to 2012. In 2012, the share stood at 28, 31, 59, 73, 69, 60 and 44 percent for India, IDN, MYS, PHL, SGP, THA and VNM, respectively (UNIDO, 2011).

Figure 3. 1 Patterns of India's Average Trade-Weighted Intra-Industry Trade in Manufactures with ASEAN, 1993-2013



Note 1: Product Code 5 – Chemicals and related products; Product Code 6 - Manufactured goods classified chiefly by materials; Product Code 7 – Machinery and transport equipment; Product Code 8 – Miscellaneous manufactured articles.

3.4.2. The Determinants - Country, Time and Industry Fixed Effects

Table 3.3 shows country, time and industry fixed-effects regression results for India's IIT in manufactures with ASEAN for the period 1993-2013. The country-pair specific regression coefficients are discussed below.

Table 3. 3 Time, Country and Industry Fixed-Effects Regression Results for India's Intra-Industry Trade in Manufactures with ASEAN, 1993-2013

	(1)	(2)	(3)	(4)	(5)	(6)
	IDN	MYS	PHL	SGP	THA	VNM
DGDP	1.002 (0.62)	-6.640*** (-4.44)	-4.567** (-2.59)	-3.296 (-1.89)	7.171*** (3.49)	8.785*** (3.93)
DPCGDP	-1.306 (-0.67)	-7.589*** (-5.33)	-7.799*** (-3.51)	-6.769* (-2.01)	6.704** (2.89)	-30.64*** (-5.21)
R&D Intensity	-7.31e-08 (-1.12)	7.55e-08* (2.56)	-0.000000513 (-1.93)	-2.03e-08 (-0.89)	-0.000000205 (-1.84)	-0.000000538*** (-4.70)
Mechandise Trade	5.58e-09 (0.37)	-3.53e-08*** (-3.89)	0.000000121 (1.43)	-2.24e-09 (-0.46)	-1.99e-08 (-1.50)	0.000000229*** (4.71)
AIFTA Dummy	-0.00613 (-0.22)	0.0314 (1.50)	0.0138 (0.51)	-0.00951 (-0.43)	-0.00156 (-0.06)	0.000504 (0.02)
Constant	0.247 (0.66)	6.658*** (5.20)	2.830** (2.93)	7.481* (2.10)	-3.580** (-2.89)	-5.630*** (-3.86)
Observations	3308	3401	3112	3431	3345	2875
t statistics in parentheses						
* p<0.05, ** p<0.01, *** p<0.001						

3.4.2.1. India-Indonesia

The coefficients for relative GDP inequality index and relative per capita GDP inequality index are, unexpectedly, positive but insignificant. Over the period 1993-2013 the relative inequality in per capita GDP between India and Indonesia increased at an annual growth rate of 4.26% which explains the positive sign. The coefficient for R&D intensity, proxied by trade in high-technology products is, unexpectedly, negative but insignificant. Between 1993-04 and 2005-13, India's total trade in high technology products declined by 8%. The coefficient for share of merchandise trade is, as expected, positive but insignificant. The insignificance is due to the fact that India-Indonesia bilateral trade is dominated by non-agricultural products. That is, the share of manufactured goods in total trade has decreased from 76% in 2003 to 48% in 2014. The coefficient for ASEAN-India FTA, a proxy for regional integration, is,

unexpectedly, negative however insignificant (reasons explained under 3.4.2.7 below).

3.4.2.2. India-Malaysia

The coefficients for relative GDP inequality index and relative per capita GDP inequality index are, as expected, positive and significant. The coefficient for R&D intensity is, as expected, positive but insignificant. The coefficient for share of merchandise trade is, unexpectedly, negative and insignificant. The explanation is as follow. Among four countries IDN, MYS, PHL and SGP, with which the decline in annual growth rate of India's merchandise is negative, that with Malaysia is highest, that is, -8.02%. The coefficient for ASEAN-India FTA is, as expected, positive but insignificant though (reasons explained under 3.4.2.7 below).

3.4.2.3. India-Philippines

The coefficients for relative GDP inequality index and relative per capita GDP inequality index are, as expected, negative and significant. The coefficient for R&D intensity is, unexpectedly, negative but insignificant. The negative coefficient is explained by a decline in annual growth rate of Indian total trade in high technology products by 39% between 1993-04 and 2005-13. The coefficient for share of merchandise trade is, as expected, positive but insignificant. The insignificance is explained by the decline in India's total merchandise trade with PHL by -3.9% between 1993-04 and 2005-13. The coefficient for ASEAN-India FTA is, as expected, positive but insignificant (reasons explained under 3.4.2.7 below).

3.4.2.4. India-Singapore

The coefficients for relative GDP inequality index and relative per capita GDP inequality index are, as expected, negative, while the former is insignificant, the latter is significant. The insignificance of relative GDP inequality index is due to the following reasons. Singapore is one of the world's largest transshipment hubs through about a quarter of global trade passes through. Thus, market size of Singapore has less to do with bilateral IIT as a significant amount trade via Singapore caters to markets of third party countries. These third party countries, especially Japan, South Korea, having their production bases in ASEAN countries and holding a big market share in India make use of the FTAs signed by India with other countries including India-Singapore CEPA (EIU, 2015).

The coefficient for R&D intensity is, as expected, negative but insignificant. This is due to a decline in annual growth rate of India's total trade in high technology products by 23% between 1993-2005-13. The coefficient for share of merchandise trade is, unexpectedly, negative but insignificant. This is explained by a decline in annual growth rate of India's total merchandise trade by 5% between 1993-06 and

2007-13. The coefficient for ASEAN-India FTA is, unexpectedly, negative but insignificant (reasons explained under 3.4.2.7 below).

3.4.2.5. India-Thailand

The coefficients for relative GDP inequality index and relative per capita GDP inequality index are, unexpectedly, positive and insignificant. This inconsistent finding can be explained through an example of India's balance of trade in auto-components which is negative with Thailand, a leading auto-industry, and is positive with Europe and North America (Sen & Srivastava, 2011). India's sourcing of auto-components from Asia is as high as 54% whereas 28% of exports enter Asia. Thus, the trade is more of one-directional with Asia including Thailand. Moreover, Thailand hosts major Japanese MNCs that source intermediate goods from Thailand and export to many other countries from India where Japanese presence is significant and on rise. Therefore size of Thai market and economic development measured by the indices has not much to do with the trade.

The coefficient for R&D intensity is, unexpectedly, negative but insignificant and is explained by the decline in annual growth rate of high technology products by 9% between 1993-04 and 2005-13. The coefficient for share of merchandise trade is, unexpectedly, negative but insignificant. The coefficient for ASEAN-India FTA is, unexpectedly, negative but insignificant (reasons explained under 3.4.2.7 below).

3.4.2.6. India-Vietnam

The coefficient for relative per capita GDP inequality index is, as expected, negative and significant. The coefficient for relative GDP inequality index is, unexpectedly, positive and significant. As discussed earlier, this is explained by the third party countries trade. The coefficient for R&D intensity is, unexpectedly, negative and significant. This is inconclusive and an outlier coefficient as the annual growth rate of India's high technology trade with Vietnam increased by 14% between 1993-04 and 2005-13. An observation that can be drawn from the dataset is India's trade in high-tech products is concentrated in a few products lines unlike other ASEAN countries under consideration where they are relatively more diversified. The coefficient for share of merchandise trade is, as expected, positive but insignificant. The coefficient for ASEAN-India FTA is, as expected, positive but insignificant (reasons explained under 3.4.2.7 below).

An explanation for the contrasts across six ASEAN countries lies in variations in the structures of these economies. India and ASEAN are expected to have higher bilateral IIT as IIT in developing countries is more with each other than with the less similar industrial countries (Havrylyshyn & Civan, 1985). However, the structural dissimilarities in manufacturing and levels of economic development have largely favored comparative advantage driven trade. For instance, the varying size

distribution in manufactures which influences demand for manufactured goods, skill formation, technology absorption etcetera (Mazumdar & Sarkar, 2013) is likely to have shaped the nature of India's merchandise trade.

3.4.2.7. Why the impact of the FTA on IIT is insignificant?

The coefficient for ASEAN-India Free Trade Agreement (AIFTA), a proxy for regional integration, as expected, is positive in case of MYS, PHL, SGP, VNM and negative in case of IDN and THA, however, it is insignificant in all cases.

Economic integration achieved through regional trade agreements as part of free trade agreements encourages IIT as this facilitates phased reduction and subsequent elimination of trade barriers in the form of tariffs, non-tariffs and transports costs. In this chapter, we explain why the coefficient for ASEAN-India FTA, a proxy for integration is insignificant. The reasons are as follows. Firstly, the reduction and elimination of trade barriers spread up to 2021 in case of Normal Track – 1 and up to 2018 in case of Normal Track 2. Whereas this chapter covers data up to 2013, that is, five years since the FTA came into effect in 2010. Secondly, tariffs consist of only a small part of trade costs. Non-tariff barriers continue to restrict trade and the provision for their removal is inadequate and non-binding on the parties. Thirdly, IIT results from consumer's preference for variety and economies of scale. These two determinants of IIT are processes (and not automatic outcomes) that evolves over a long-term as per capita income improves and average costs of production decrease respectively.

Fourthly, the traditional argument states that countries initiating market reforms at a later stage can gain from the already available technical knowledge. (Chakravarthy, 1997) questions if such technical knowledge is suitable to developing countries and if its diffusion is contextually befitting in their case. Moreover, low productivity levels in developing countries are more due to technical inefficiency (Nayyar, 2013). Thus, the argument that outward orientation through FTAs/RTAs increases IIT is dependent on technology absorption capacity of FTA members. Technical efficiency and favourable domestic environment for diffusion of technology in case of India and ASEAN countries differ as discussed in the introductory chapter. Thus, such difference affecting competitiveness can lead to time lags and delays in reaping the benefits of FTAs especially in the short term.

Due to the combination of reasons mentioned above, there will be a considerable time-lag between the signing of the FTA and realizing the benefits. Thus, it is too early to see the impact on the bilateral IIT.

3.4.3. The Determinants – Country and Time Fixed-Effects and Random Effects

In the previous estimation the panel data for 21 years (1993-2013) is used for the regression. In that, 166 product groups as cross-section units at 3-digit level of SITC Rev. 3 were studied over a 21 time-series units. Thus, the total observations were 20,916.

In this regression, only the country and time effects are considered, therefore, the total observations are 126, that is, 21 years multiplied by 6 ASEAN countries.

Removal of industry effects would mean the following. Firstly, the sample size is reduced to 126. Secondly, IIT will be high as the trade data is reduced to exports and imports of manufactured goods, in other words, aggregation level is high. Thirdly, this in turn makes assessment of determinants of intra-industry trade (IIT) redundant as data is no more sector-specific. Instead the regression becomes an assessment of determinants of India's trade in manufactures with ASEAN countries (1993-2013).

Table 3. 4 Time and Country Fixed-Effects Regression Results for India's Intra-Industry Trade in Manufactures with ASEAN, 1993-2013

	(1) ASEAN
DGDP	-0.363 (-0.20)
DPCGDP	0.0776 (0.04)
R&D Intensity	0.000000173 (1.98)
Merchandise Trade	0.00000388 (0.34)
BFTA Dummy	-0.196 (-1.95)
AIFTA Dummy	0.131* (2.28)
Constant	0.691 (0.50)
Observations	126
t statistics in parentheses	
* p<0.05, ** p<0.01, *** p<0.001	

Table 3. 5 Time and Country Random-Effects GLS Regression Results for India's Intra-Industry Trade in Manufactures with ASEAN, 1993-2013

	(1) ASEANre
DGDP	-1.007*** (-8.38)
DPCGDP	0.230** (2.58)
R&D Intensity	0.000000187* (2.33)
Merchandise Trade	0.00000346 (0.55)
BFTA Dummy	-0.188 (-1.90)
AIFTA Dummy	0.170** (3.20)
Constant	0.902*** (13.95)
Observations	126
t statistics in parentheses	
* p<0.05, ** p<0.01, *** p<0.001	

The regressions also include a new variable, that is, bilateral FTA (BFTA). There are two bilateral FTAs. Bilateral FTA is represented by dummies, that is, 0 for years prior to India-Singapore FTA (1993-2004) and 1 for years since India-Singapore FTA came into effect (2005-2013). Similarly, 0 for years prior to India-Malaysia FTA (1993-2010) and 1 for years since India-Malaysia FTA came into effect (2011-2013).

Table 3.4 shows the time and country fixed effects regression results for India's IIT in manufactures with ASEAN for the period 1993-2013. The coefficient for relative GDP inequality index is, as expected, negative but insignificant. The coefficient for relative per capita GDP inequality index is, unexpectedly, positive and insignificant. The coefficient for R&D intensity is, as expected, positive but insignificant. The coefficient for share of merchandise trade is, as expected, positive but insignificant. The coefficient for bilateral FTA is, unexpectedly, negative though insignificant. The coefficient for ASEAN-India FTA is, as expected, positive and significant.

Similarly, Table 3.5 shows the time and country random-effects regression results for India's IIT in manufactures with ASEAN for the period 1993-2013. The coefficient for relative GDP inequality index is, as expected, negative and significant. The coefficient for relative per capita GDP inequality index is, unexpectedly, positive and significant. The coefficient for R&D intensity is, as expected, positive and significant.

The coefficient for share of merchandise trade is, as expected, positive but insignificant.

The coefficient for bilateral FTA is, unexpectedly, negative and insignificant. The coefficient for ASEAN-India FTA is, as expected, positive and significant. Unlike fixed-effects model, random-effects model assumes that the error term is a random drawing from a large sample. However, considering the small sample of 126 observations in the regression, using random-effects model is not plausible.

In both fixed-effects and random-effects regressions, except in case of relative per capita GDP inequality index and bilateral FTA, rest of the independent variables have shown the expected sign of coefficients. However, levels of significance vary between the two. Interpreting these coefficients is not logical. Contrary to the sign of the coefficient, relative per capita GDP inequality index has shown a declining trend across the six ASEAN countries. The compound annual growth rate of relative inequality in per capita GDP is -5.88% for IDN, -1.29% for MYS, -8.67% for PHL, -0.33% for SGP, -2.39% for THA and -7.18% for VNM. Similarly, interpreting the negative and significant bilateral FTA is not tenable. Thus, the small sample size is unable to capture the impact of these two variables in a meaningful way.

3.5. Conclusion

The analysis of India's IIT with six ASEAN member countries, done separately and comparatively, is important in understanding the contrasts in the intensity and nature of bilateral IIT.

The findings can be summarized as follows: (a) There is no set pattern in India's IIT in manufactures with the six ASEAN member countries. (b) There are significant variations in the observed patterns and determinants of India's bilateral IIT with the six ASEAN member countries while they vary among the four product groups. The structural variations in manufacturing sectors and levels of economic development of these countries, explain the idiosyncratic nature of results.

The distinct patterns and determinants of IIT have significant implications for the regional economic integration policies and strategies. India-ASEAN regional economic integration has followed a top-down approach. Signing of the FTA in goods, 2009 and in services and investment, 2014, are major step towards reducing the bilateral trade costs. Yet, coverage of policies and institutions such as trade facilitation is critical for deeper integration.

Evidently, the manufacturing sectors of India and each of the ASEAN member countries under consideration are diverse in terms of type of size structure - equality,

duality and skewness in size distributions of large, medium and small firms (Mazumdar & Sarkar, 2013) and their capacity for technology absorption, competitiveness of product groups under manufactures et cetera. Thus, the strategies towards regional economic integration should be consistent with structural diversities. The bottom-up approach, which is a key characteristic of East Asian economic integration, to regional integration can facilitate cooperation over such structural diversities and complement the current top-down initiatives.

The limitations of the analysis are as follows. First, the study assesses IIT in manufactures for six diverse country pairs, juxtaposing the findings in a single frame. Hence, it is beyond the scope of this paper to examine country-specific finer details. Second, the GLI is sensitive to level of product disaggregation. Thus, assessment of India's IIT with individual ASEAN member countries at higher levels of product disaggregation is likely to reveal more refined aspects of IIT. These are the possible directions for future research work.



Chapter 4: ASEAN-India Trade: An Assessment of Non-Tariff Measures

4.1. Introduction

ASEAN-India Free Trade Agreement (AIFTA), in effect since January 2010, has facilitated successive reduction in tariffs on goods trade between ASEAN members and India. The compound annual trade growth rate saw a decline of 64% between pre-AIFTA (2005-09) and post-AIFTA (2010-14) (ARIC ADB). Reasons behind this contrary growth trend are many. However, non-tariff measures (NTMs) continue to restrict trade and are attracting policy attention as reflected by the major concerns raised on both the sides, at policy level¹³ and among business groups¹⁴.

The purpose of this chapter is to contribute an assessment, quantitative and qualitative, of NTMs on India's imports from six major ASEAN economies, viz., Indonesia (IDN), Malaysia (MYS), Philippines (PHL), Singapore (SGP), Thailand (THA) and Vietnam (VNM), in their respective leading sectors of trade.

NTMs, due to their changing nature over the years, are gaining significance. Unlike in the past, tackling the NTMs is relatively complex and challenging due to the observed trend of growing relative importance NTMs as means to achieve public policy objectives than to protect domestic producers (WTR, 2012). As economies grow and incomes increase, public policy concerns expand. As a result, NTMs, unlike tariffs, are becoming more relevant¹⁵ and are drawing policy attention at the multilateral, regional and national levels.

From an economic perspective, in 2010, comprehensive trade costs (CTCs) excluding tariff costs of trading goods between ASEAN and India, on average, involved additional costs of approximately 83% of the value of goods as compared to when they traded within their borders. This is consistent with the finding (Duval & Utoktham, 2010) that tariffs only account for a tiny portion of overall trade costs. Similarly, in 2011, comprehensive trade costs excluding tariff costs of trading in manufactured goods, on average, involved additional costs of approximately 83.2% of the value of goods traded bilaterally. In case of trading in agricultural goods the figure stood 74.6%. These costs are significantly higher compared to those involved between the six ASEAN members under consideration and rest of the four ASEAN members.

¹³ “Malaysia says non-tariff barriers hinder ASEAN-India trade ties, The Hindu Business Line, August 31, 2014

¹⁴ Non-tariff barriers in ASEAN making Indian products uncompetitive: FICCI, The Economic Times, 25 September, 2011

¹⁵ Ibid.

From a policy perspective, taking note of the frequent¹⁶ references made and concerns raised by ASEAN members and India about the non-tariff barriers, the need to devise strategies to tackle the non-tariff measures is important. With the ASEAN-India FTA in place, further coverage of non-tariff aspects would deepen the economic integration.

Are all non-tariff measures trade restrictive? Not always. Motives behind interventions of non-tariff by governments differ. When aimed at increasing national welfare, trade effects are unintended consequences. When motivated by political economy goals, interest groups are favored and trade is affected at the expense of national welfare. Motives also depend on the intended distributional consequences – whether they benefit consumers or producers (WTR, 2012). However, these motives are less/non-transparent¹⁷ due to information asymmetry¹⁸ between the economic agents. Given the complexity of the measures, tackling them is a challenging task coupled with the differing economic structures of ASEAN countries and India. With the shift from “protection to precaution”¹⁹ distinctions are to be drawn between those non-tariff measures that can be ‘removed’ and those that need to be ‘managed’ in a way that public policy objectives are met without compromising the trade benefits.

It is in this context, this chapter adopting both quantitative and qualitative approaches, consists of two objectives. First is to estimate tariff equivalent (TE) of NTMs using relative price differences of Indian imports from six individual ASEAN member countries and world. Second is to analyze the nature of NTMs using contextual, descriptive data drawn from academic literature, reports by government and international institutions and business surveys, national and international databases.

The major findings are (a) The TEs of NTMs differ among the ASEAN member countries and the sectors under consideration indicating varying motives behind imposition of NTMs by India; (b) In consistence with the general trend, NTMs account for a major portion of bilateral trade costs. (c) With the economic growth and rising incomes ASEAN and India do use and deal with the challenges of SPS/TBT measures; (d) At the policy lever and among business groups focus NTM related concerns are on rise; (e) India and ASEAN, following the trend elsewhere, have used NTMs to recover from economic downturn, mutually affecting each other.

This chapter is structured as follows. Section 2 gives an overview of the existing literature on non-tariff measures. Section 3 provides the current status of NTMs in

¹⁶ An observation made out of the newspaper reports

¹⁷ It is not necessary that aggregate welfare should increase with enhanced transparency, refer World Trade Report, 2012, pp. 51-52

¹⁸ A situation where policy makers and relevant economic agents do not have the same information (Geraats, 2002), retrieved from WTR 2012

¹⁹ World Trade Report 2012

ASEAN-India trade followed by a brief note on methodology and data in Section 4. Section 5 reports and explains the results under different themes. Section 6 suggests policy recommendations and the Section 7 concludes the chapter.

4.2. Literature Review

NTMs refer to “policy measures, other than tariffs, that can potentially affect trade in goods.” (WTR, 2012). UNCTAD defines NTMs as “policy measures, other than ordinary customs tariffs, that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both.”

NTMs lead to different types of economic effects categorized as follows. Firstly, cost raising effect called as “protection effect”, secondly, supply-shifting effects which arise when regulations are used to tackle externalities affecting international goods, for example restricting products that adversely affect health and thirdly, demand-shifting effects to address specific market failures, for example provision of certain compulsory information to consumers (Fugazza & Maur, 2008).

According to the (WTR, 2012), the motives for government non-tariff measure interventions can be three fold. First, to increase national welfare, the interventions aim to correct market failures and to exploit a country’s or a firm’s market power. The former have trade effects that are unintended consequences of the policy and the latter come at the expense of one’s trade partners (beggar-thy-neighbor practices). Second, to meet the “politically economy goals” where special interest groups/organized producer groups, civil society, non-governmental organizations exert pressure on politicians on concerns of public interest like health, safety, environment. Here the NTMs can be distinguished as those motivated by public policy objectives and those motivated by competitiveness concerns. There are instances where the two motivations overlap. Third, motivations can depend on the intended distributional effects, that is, whether they benefit consumers or producers.

One of the challenges dealing with NTMs is their distinction from non-tariff barriers (NTBs). UNCTAD MAST concluded that drawing distinction between NTMs and NTBs is futile and should be left open²⁰ as it depends on the motives behind such interventions²¹ which are less/non-transparent.

Studies on NTMs, particularly the empirical studies have attempted to quantify the effects of NTMs on trade. But the observed limitations include lack of data availability (Bacchetta et al., 2012), incomplete data (Korinek, Melatos, & Rau,

²⁰ History of NTMs, UNCTAD Website

²¹ World Trade Report, 2012

2008), crude methods such as frequency ratio or coverage ratio that fail to account for the measures' stiffness²².

(Ferrantino, 2006) assesses the existing methods of measuring NTMs. He also answers a set of questions revealing the pros and cons of the available methods. (Fugazza & Maur, 2008) focus on assessment of the various treatments of NTBs in CGE models, specifically global trade analysis project (GTAP) standard model by way of discussions, questioning and analysis. Their findings and analysis are very handy for they point out various precautions in estimating and interpreting the results in a CGE context. (Dean, Feinberg, Signoret, Ferrantino, & Ludema, 2006) develop a simple differentiated product model of retail prices to specify the direct relationship between NTBs and prices. Using the model, a price gap specification is derived and estimated using retail price data for about 115 cities and 47 consumer products from the Economist Intelligence Unit (EIU) City Data for 2001. As a result, both cross-country averages and country-specific estimates of the effects of NTBs, specifically for 4 product groups – fruits and vegetables, bovine meats, processed food and apparel, for more than 60 countries are obtained. The two contributions are estimation of price effects directly for many countries and explicit data on incidence of NTMs drawn from two complementary databases of UNCTAD TRAINS and USITC.

(Andriamananjara et al., 2004), in a CGE context estimate the global economic effects of eliminating significant categories of NTMs. First, they build a database of instances of NTMs for particular products and countries based on WTO, US govt. and EU sources and compared it with that of UNCTAD. Then the database is concorded to a GTAP-feasible multi-region, multi-sector aggregation. Retail price data from the EIU City Data database is similarly concorded and are, by taking into account systematic deviations, analyzed to determine whether and to what extent the presence of NTMs is associated with significantly higher price. The price effects thus obtained are used to simulate to estimate the trade and welfare effects of their removal. The results yield global gains of \$90 billion. These gains are said to arise from liberalization by Japan and EU by region and from liberalization of apparel and machinery equipment by sector. (Andriamananjara, Ferrantino, & Tsigas, 2003) introduce a set of new estimates of NTB price-gaps in a standard simulation model and study economic effects of their elimination. Product groups/sectors considered are footwear, wearing apparel and processed foods using three different techniques – tariff equivalent, export tax and sand-in-the-wheels. For all the groups, NTB liberalization results in a large increase in world trade and an improved global welfare. Most of the gains from the elimination of NTBs accrue to the liberalizing regions.

²² A Practical Guide to Trade Policy Analysis, WTO, page 76

Some studies have shown positive impact of specific NTMs. (Jaffee & Henson, 2004) found Kenyan fresh products exporters having improved their EU market access as a result of meeting the EU requirements. (Masakure, Henson, & Cranfield, 2009) show how Pakistan's textiles, leather and agro-food exporters benefited from IS9000 certification. (Devadason, 2011) using augmented gravity model finds no evidence of adverse impacts of NTMs on intra-ASEAN exports, suggesting NTMs promote intra-regional exports, irrespective of broad commodity types.

Academic literature that directly address NTMs in the context of ASEAN-India trade are lacking. (Saqib & Taneja, 2005) conduct a case study on non-tariff barriers faced by Indian exports to Sri Lanka and ASEAN. They find that the incidence of NTMs imposed by Sri Lanka and ASEAN has increased during 1997-98 to 2002-2003. The study provides some basic insights of a period when trade between ASEAN and India was minimal. But the study consists of limitations such as inconsistent data and sampling problems in exporter survey. (UNCTAD, 2007) business survey on NTMs from selected countries including India does provide important insights and evidence for India, Thailand and Philippines.

Keeping in perspective the recent trends and patterns of trade growth and the current pace of economic integration between ASEAN and India, NTMs are a potential research area. It is in such background, this chapter estimates tariff equivalent of NTMs using relative price differences of Indian imports from six individual ASEAN member countries and world and analyses their nature.

4.3. Non-Tariff Measures in ASEAN-India Trade: An Overview

According to the literature, expansion in coverage of policies and institutions (Mikic, 2011), harmonization of policies facilitating trade (Lawrence, 2000) and increase in trade in intermediate products create demand for deeper agreements (WTR, 2011a) enable 'deepening' of integration. Substantial reduction or elimination of import tariffs will not automatically result in reaching the trade potential unless the NTMs or "behind the border measures" that are becoming significant are addressed (Dhar, 2011). However, the ASEAN-India FTA in goods, signed in 2009 and in effect since January 2010, covers limited non-tariff aspects (see Table 4.1).

Table 4. 1 Provisions of ASEAN-India Free Trade Agreement

TARIFFS
Article 4; Annex1; 1 (b): Early Harvest: eliminate tariffs from 2004 to 2010. Negative list: Tariff elimination from Jan 2010. 5 categories: Normal track 1 (December 2013 or 2018), normal track 2 (December 2016,2019 or 2021), Sensitive track (reduction to 5% 2016, 2019 or 2021), Special Products (partial reduction of tariffs by 2019), Highly Sensitive Products (reduce tariff to 50%, by 50% or by 25% by 2019, 2022 and

2024). Some exclusions - annual review.	
Rules of Origin Article 7; Annex 2; Rule 4 Local value added: 35% and, CTS	
Contingency Measures Anti - Dumping : Not mentioned Countervailing Duties : Not mentioned Safeguards : Article 10: As per WTO and, Transitional Safeguard	
Standards : Article 8: SPS and TBT: As per WTO	
SERVICES	
Parties agree to enter the negotiations under the Framework Agreement*	
INVESTMENT	
Parties agree to enter the negotiations under the Framework Agreement	
TRADE FACILITATION	
Customs procedures	Yes, Article 14
Customs valuation	No
Trade regulations publication and administration	No
Use of ICT	No
Mobility of business people	No
Freedom of transit	No
Transport and logistics	No
Trade finance	No
Customs procedures	Yes, Article 14
OTHER AREAS	
Government Procurement	No
Investment	No
Competition Policy	No
Intellectual Property	No
Dispute Settlement	Yes, Article 4
Labor Mobility	No
Labor and Environmental Standards	No
Technical cooperation	No, Article 6: Framework Agreement
RULES OF ORIGIN	
Cumulation	Article 7; Annex 2; Rule 4: Partial
Specific Process	Article 7; Annex 2; Rule 6; Appendix B; Product Specific Rules
Heading Change	Not mentioned
De Minimis	Not mentioned

*Date of Signature 13 November 2014; Date of entry into force 01 July 2015

Source: Asia-Pacific Trade and Investment Database (APTID)

4.4. Methodology and Data

4.4.1. Estimation of Tariff Equivalent (TE) of Non-Tariff Measures on Indian Imports from ASEAN Economies

The chapter chooses to estimate TE of NTMs on top 50 Indian import products in following leading sectors from ASEAN economies for the period 2010-2014. Indonesia²³ – HS Code 15: Animal or Vegetable Fats and Oils; Malaysia, Philippines, Singapore and Vietnam – HS Code 85: Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders; Thailand – HS Code 84: Nuclear Reactors, Boilers, Machinery and Mechanical Appliances and Computers.

The leading sectors were chosen as per HS 2002 classification at 2-digit level and based on the volume of imports in the recent five years (2010-2014) from the six ASEAN countries separately. Subsequently, top 50 products from the chosen leading sectors were chosen at 6-digit level based on volume of imports in 2014.

NTMs increase the domestic price above what it would be in their absence [(UNCTAD, 2012); (WTR, 2012)] which creates a “price wedge” or “price-gap.” Price gap arises from the comparison of prices before and after the NTB mark-up, expressed as tariff-equivalent (WTR, 2012).

One of the problems in estimation of TE is identifying commodities with comparable domestic and import prices. In this study, following problems were faced while identifying products whose domestic and import prices are comparable. Firstly, import products whose domestic prices are available but are not as per HS codes/HS 6 digit, the level of disaggregation under consideration, as India does not maintain such data. Secondly, every year India announces minimum support prices (MSPs)²⁴ for many agricultural and horticultural products, especially food crops. But imports of most of these products from ASEAN are prohibited from entering trade agreements.²⁵ Thirdly, the free world price data from UN Stat and the Indian consumer price index (CPI) and world price index (WPI) are available for broad groups of representational commodities which are not comparable with the import data.

In view of these problems, the relative price differences of the top 50 Indian import products from the six ASEAN countries were estimated as shown below:

²³ Total number of products traded under HS Code 15 are 15, thus, the estimation is limited to 15 products.

²⁴ MSP is the minimum price paid to the farmer for procuring food crops. It offers an assurance to farmers that their realisation for the agricultural produce will not fall below the stated price, The Hindu, dated 22 June 2015.

²⁵ See India’s Agriculture Trade Policy and status under Trade Agreements, Department of Agriculture, Cooperation and Farmers Welfare.

$$\text{Relative Price Difference}_{IND,IDN,15} = \frac{P_{IDN}^{Mi} - P_{WLD}^{Mi}}{P_{WLD}^{Mi}} \times 100$$

$$\text{Relative Price Difference}_{IND,MYS,85} = \frac{P_{MYS}^{Mi} - P_{WLD}^{Mi}}{P_{WLD}^{Mi}} \times 100$$

$$\text{Relative Price Difference}_{IND,PHL,85} = \frac{P_{PHL}^{Mi} - P_{WLD}^{Mi}}{P_{WLD}^{Mi}} \times 100$$

$$\text{Relative Price Difference}_{IND,SGP,85} = \frac{P_{SGP}^{Mi} - P_{WLD}^{Mi}}{P_{WLD}^{Mi}} \times 100$$

$$\text{Relative Price Difference}_{IND,THA,84} = \frac{P_{THA}^{Mi} - P_{WLD}^{Mi}}{P_{WLD}^{Mi}} \times 100$$

$$\text{Relative Price Difference}_{IND,VNM,85} = \frac{P_{VNM}^{Mi} - P_{WLD}^{Mi}}{P_{WLD}^{Mi}} \times 100$$

where P_{IDN}^{Mi} is the price of import (M) of product 'i' from Indonesia; P_{WLD}^{Mi} is price of import (M) of product 'i' from World; Similarly, P_{MYS}^{Mi} is the price of import (M) of product 'i' from Malaysia; P_{PHL}^{Mi} is the price of import (M) of product 'i' from Philippines; P_{SGP}^{Mi} is the price of import (M) of product 'i' from Singapore; P_{THA}^{Mi} is the price of import (M) of product 'i' from Thailand and P_{VNM}^{Mi} is the price of import (M) of product 'i' from Vietnam. HS Codes 15 - Animal or Vegetable Fats and Oils; HS Code 85: Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders; HS Code 84: Nuclear Reactors, Boilers, Machinery and Mechanical Appliances and Computers.

The relative price differences consist of tariffs and non-tariffs. Thus, the weighted average effectively applied tariffs imposed by India on the top 50 import products were subtracted from the relative price differences and the remainder obtained is tariff equivalent of NTMs (shown in Table 4.2 to Table 4.7).

Positive TE of NTMs implies India's import of product 'i' from the ASEAN country under consideration is as much expensive in relation to import from world. Negative TE of NTMs implies India's import from the ASEAN country under consideration is as much cheaper in relation to import from world. TE of NTMs thus obtained indicates not only the price rise caused by NTMs but the thickness.

Data on imports were drawn from UN Comtrade via World Integrated Trade Solutions (WITS). Weighted average effectively applied tariff rates were drawn from WTO-IDB (Integrated Database) via WITS.

4.4.2. Analysis of Nature of ASEAN-India trade related NTMs

Descriptive data used in the analysis were extracted from academic literature, reports by governments and international institutions, business surveys.

Interpretations of data drawn from Asia-Pacific Trade and Investment Agreement Database (APTIAD), UNCTAD Business Survey reports, ESCAP-World Bank Trade Costs Database, Global Trade Alert Database require caution as the former two are unilateral databases and the latter two are bilateral in nature. In addition, their definitions of NTMs differ.

4.5. Results

4.5.1. Tariff Equivalent (TE) of Non-Tariff Measures on Indian Imports from ASEAN Economies

Table 4.2 to Table 4.7 provide TE of India's top 50 leading sector import products from six individual ASEAN countries estimated using relative price differences for the period 2010-14.

Positive TE of NTMs implies India's import of product 'i' from the ASEAN country under consideration is as much expensive in relation to import from world. Negative TE of NTMs implies India's import from the ASEAN country under consideration is as much cheaper in relation to import from world. Also negative TE of NTMs imply various subsidies depending on the motive behind, that is, whether importing the product in question is in the interest of domestic producers as inputs or exporting countries' extending subsidies to encourage exports. These motives are non-transparent and hard to categorise as the production is fragmented transnationally.

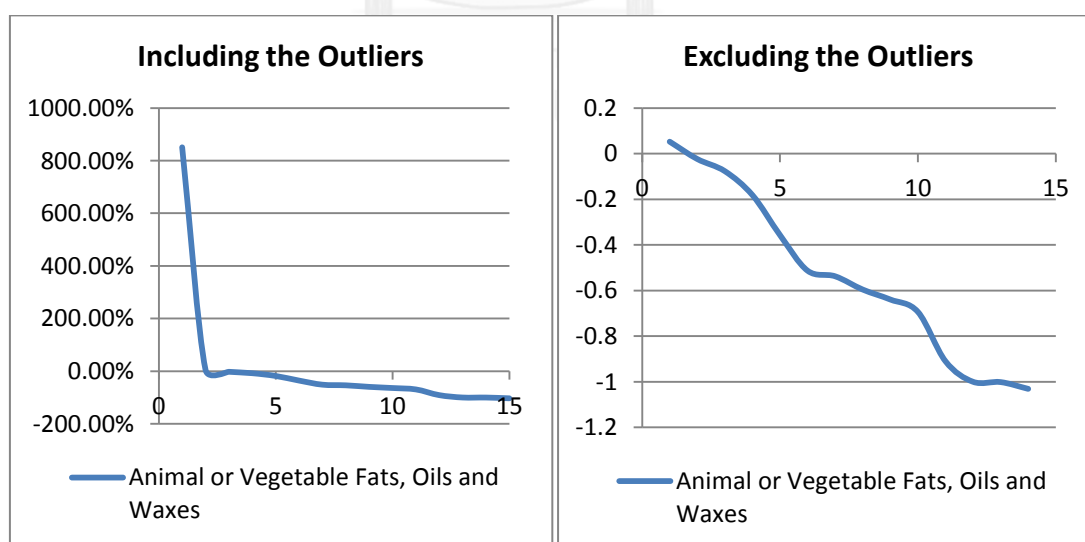
Figure 4.1 to Figure 4.6 show the range of TE of NTMs of the 50 products. The figures give a picture of the extent to which products vary in terms of thickness of NTMs including the outliers. Figure 4.7 provides a composition of estimates of TE of Non-NTMs in chosen sector in a single frame. This enables a comparison across six countries, especially between Malaysia, Philippines, Singapore and Vietnam as the leading sector is the same for all these countries, that is, HS code 85, while it is 15 and 84 in case of Indonesia and Thailand.

Table 4. 2 Estimates of Tariff Equivalent of Non-Tariff Measures on Indian Imports of Animal or Vegetable Fats and Oils from Indonesia (2010-2014)

Sl. No.	Prod Code	Product Description	Average (2010-14)
1.	150420	Fats and Oils and Their Fractions of Fish (Other than Liver Oils)	-91.00%
2.	150710	Soya Bean Oil (Crude Oil)	-2.36%
3.	151110	Palm Oil (Crude Oil)	-100.14%
4.	151190	Palm Oil and Its Fractions (Other than Crude Oil)	-7.69%
5.	151211	Sunflower-seed, Safflower Oil (Crude Oil)	5.24%
6.	151311	Coconut (Copra) Oil (crude Oil)	-100.00%
7.	151319	Other Coconut Oil and Its Fractions	-63.94%
8.	151321	Palm Kernel Oil, Babassu Oil (Crude Oil)	-59.58%
9.	151329	Palm Kernel Oil, Babassu Oil and Its Fractions (Other than Crude Oil)	-53.76%
10.	151411	Crude Oil	-69.35%
11.	151620	Vegetable Fats and Oils and Their Fraction	-51.31%
12.	151800	Animal or Vegetable Fat and Oil and Their Fraction (Chemically Modified)	850.69%*
13.	152000	Glycerol, Crude; Glycerol Waters and Glycerol Lyes	-18.17%
14.	152110	Vegetable Waxes	-103.10%
15.	152190	Beeswax, Other Insect Waxes, Spermaceti	-35.70%

Note: * - Outlier; Source: Author's Calculation

Figure 4. 1 Estimates of Tariff Equivalent of Non-Tariff Measures* on Indian Imports of Animal or Vegetable Fats and Oils from Indonesia (2010-2014)



Note: Outlier – HS Code 151800.

The TE of NTMs on Indian imports of products under HS code 15, animal or vegetable fats and oils, from Indonesia are negative except an outlier product 158800, chemically modified animal or vegetable fats and oils. Indonesia is one of the leading

exporters of these products besides Malaysia and Netherlands, while India is one of the leading importers with a world share of 34.6% (UNCTAD, 2008)

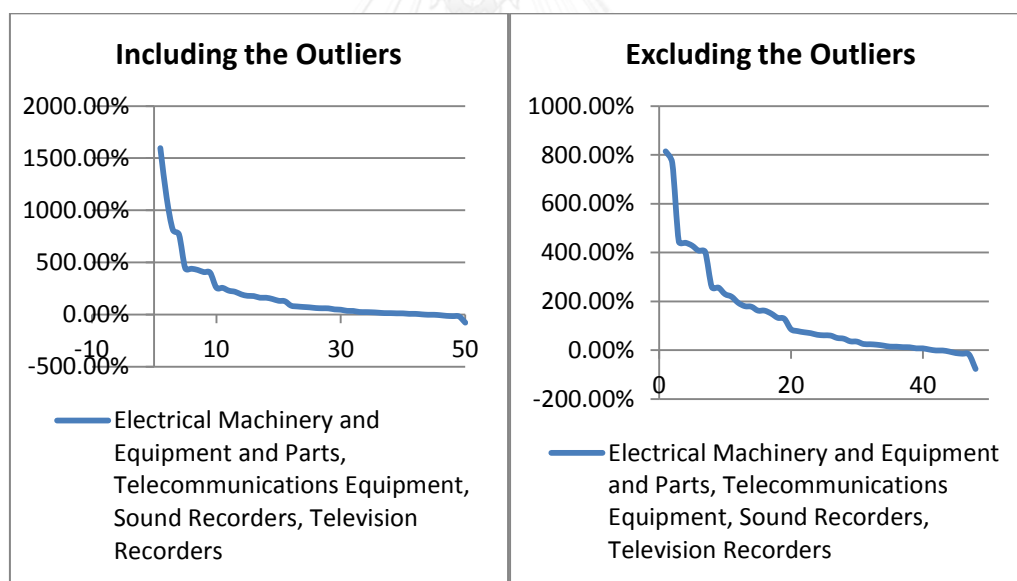
Table 4. 3 Estimates of Tariff Equivalent of Non-Tariff Measures on Indian Imports of Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders from Malaysia (2010-2014)

Sl. No.	Prod Code	Product Description	Average (2010-14)
1.	850300	Parts, of Motors, of Generators, of Generating Sets, of Rotary Converters	50.10%
2.	850440	Static Converters	402.11%
3.	850490	Parts, of Electrical Transformers, of Static Converters, of Inductors	-77.05%
4.	850720	Other Lead-acid Accumulators	407.40%
5.	850780	Other Electric Accumulators	150.10%
6.	851650	Microwave Ovens	7.45%
7.	851711	Line telephone sets with cordless handsets	-14.52%
8.	851719	Other (Telephone sets)	767.34%
9.	851750	Other apparatus, for carrier-current line systems or digital line systems	194.14%
10.	851790	Parts of Electrical Apparatus for Line Telephony or Line Telegraphy	162.12%
11.	851822	Multiple Loudspeakers, Mounted in the Same Enclosures	814.45%
12.	851829	Other Loudspeakers	60.84%
13.	852190	Other Video Recording or Reproducing Apparatus	162.03%
14.	852290	Other Parts and Accessories of Apparatus of Recording or Reproducing	59.93%
15.	852390	Other Prepared Unrecorded Media for Sound Recording	256.64%
16.	852520	Transmission Apparatus Incorporating Reception Apparatus	180.26%
17.	852540	Still image video cameras and other	444.58%
18.	852721	Radio-broadcast Receivers Combined With Sound Recording or Reproducing Apparatus (For Vehicles)	2.55%
19.	852729	Other Radio-broadcast Receivers, for Motor Vehicles	78.14%
20.	852731	Other Radio-broadcast Receiver, With Recording or Reproducing Apparatus	258.54%
21.	852812	Colour	440.24%
22.	852813	Black and white or other monochrome	428.48%
23.	852821	Colour	47.11%
24.	852990	Other Parts of Transmission Apparatus, Radar Apparatus or Television Receivers	-1.30%
25.	853110	Burglar or Fire Alarms and Similar Apparatus	1596.73% *
26.	853190	Parts of Electric Sound or Visual Signalling Apparatus (Bells, Sirens)	229.77%
27.	853229	Other Fixed Capacitors	219.15%
28.	853310	Fixed Carbon Resistors, Composition or Film Types	62.98%
29.	853329	Other Fixed Resistors	12.26%
30.	853340	Other Variable Resistors, Including Rheostats and Potentiometers	35.09%
31.	853400	Printed Circuits	11.88%
32.	853641	Relays, for a Voltage Not Exceeding 60v	-1.28%
33.	853650	Switches, for a Voltage Not Exceeding 1,000v	18.94%
34.	853669	Plugs and Sockets, for a Voltage Not Exceeding 1,000v	73.36%
35.	853690	Other Apparatus for Making Connections to or in Electrical Circuits	36.21%
36.	853710	Bases for Electric Control or the Distribution, Not Exceeding	-17.51%

		1,000v	
37.	853810	Boards, Panels, Consoles, Desks, Cabinets and Other Bases	-11.86%
38.	853890	Parts of Switches, Automatic Circuit Breakers, Relays or Connector	7.44%
39.	854110	Diodes, Other than Photosensitive or Light Emitting Diodes	69.59%
40.	854129	Other Transistors, Other than Photosensitive Transistors	86.04%
41.	854140	Photosensitive Semiconductor Devices; Light Emitting Diodes	132.67%
42.	854160	Mounted Piezo-electric Crystals	-5.63%
43.	854221	Digital	14.31%
44.	854320	Signal Generators	1125.57% *
45.	854389	Other (Machines and apparatus)	24.27%
46.	854390	Parts of Particle Accelerators, Audio Mixers, High Frequency Amplifiers	128.51%
47.	854411	Winding Wire of Copper	14.57%
48.	854459	Other Electrical Conductors	25.33%
49.	854511	Carbon Electrodes, of a Kind Used for Furnaces, for Electrical Purposes	22.49%
50.	854519	Other Carbon Electrodes, for Electrical Purposes	178.08%

Note: * - Outliers; Source: Author's Calculation

Figure 4. 2Estimates of Tariff Equivalent of Non-Tariff Measures* on Indian Imports of Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders from Malaysia (2010-2014)



Note: Outlier – HS Code 853110 and 854320

The TEs of Indian imports of products under HS code 85, Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders, from Malaysia, Philippines, Singapore and Vietnam differ significantly.

In case of imports from Malaysia, the TE of NTMs ranges from an exorbitant 1596.73% on product 853110 - burglar or fire alarms (see Image 4.1 in Appendix C) and similar apparatus to -77.05% on product 850490 – parts of electrical transformer

of static converters and of inductors. In case of Philippines, the range is 1234.88% on product 853941 – arc lamps (see Image 4.2 in Appendix C) to -65.98% on product 851829 – other loudspeakers. Product 853949 – other ultraviolet or infrared lamps is an outlier with a TE of NTMs about 8062.92%. In case of Singapore, the range is 355.87% on product 850511 – permanent magnets and magnetized articles of metal (see Image 4.3 in Appendix C) to -85.80% on product 852190 – other video recording or reproducing apparatus. In case of Vietnam, the range is 520.22% on product 850910 – vacuum cleaners with self-contained electric motors to -112.20% on product 850153 – multi-phase AC motors of an output exceeding 75kw. Product 850220 – generating sets with spark-ignition internal combustion piston engines and product 850680 – other primary cells and primary batteries are outliers (see Image 4.5 in Appendix C) with TE of NTMs about 39759.69% and 7707.68% respectively.

The TEs of Indian imports of products under HS code 84, Nuclear Reactors, Boilers, Machinery and Mechanical Appliances and Computers from Thailand explained as follows. It ranges from 6624.40% on product 848350 – flywheels and pulleys, including pulley blocks (see Image 4.4 in Appendix C) to -35.61% on product 841582 – other air conditioning machines incorporating a refrigerating unit. Product 847010 – electronic calculators, operating without external source of power and product 848210 – ball bearings are outliers with TE of NTMs about 765696.53% and 60654.50% respectively.

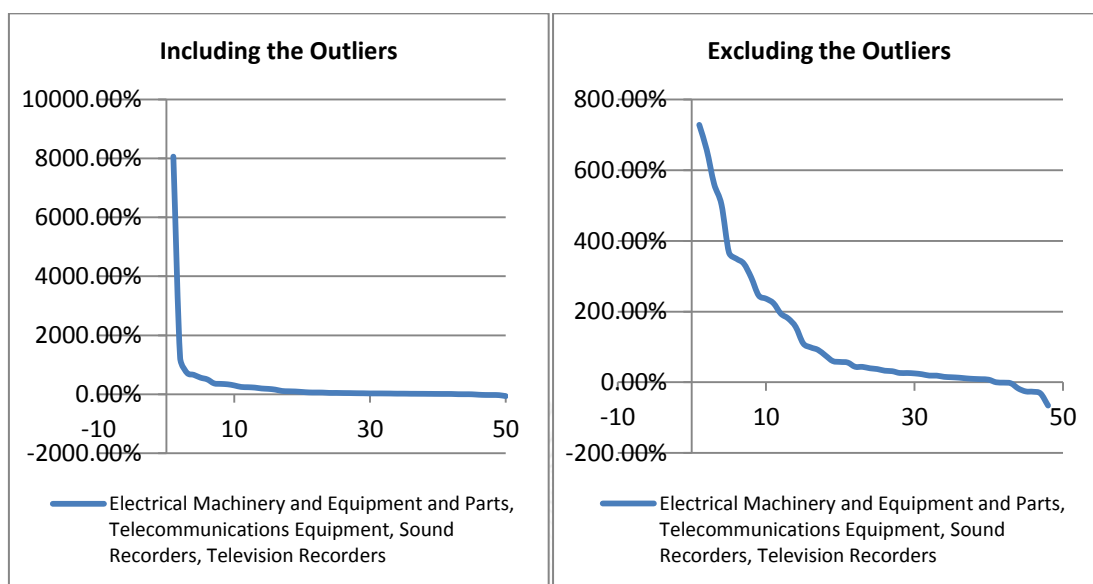
Table 4. 4 Estimates of Tariff Equivalent of Non-Tariff Measures on Indian Imports of Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders from Philippines (2010-2014)

Sl. No.	Prod Code	Product Description	Average (2010-14)
1.	850110	Motors of an Output Not Exceeding 37.5w	43.91%
2.	850131	Dc Motors, Dc Generators, of an Output Not Exceeding 750w	15.35%
3.	850300	Parts, of Motors, of Generators, of Generating Sets, of Rotary Converters	9.50%
4.	850410	Ballasts for Discharge Lamps or Tubes	658.14%
5.	850440	Static Converters	728.61%
6.	850450	Inductor	57.53%
7.	850490	Parts, of Electrical Transformers, of Static Converters, of Inductors	180.31%
8.	850720	Other Lead-acid Accumulators	367.59%
9.	850790	Parts of Electric Accumulators	26.30%
10.	851190	Parts of Ignition , Starting Equipment, for Internal Combustion Engine	39.57%
11.	851230	Electrical Sound Signalling	561.47%
12.	851290	Parts, of Electrical Lighting or Signalling Equipment, of Defrosters	7.33%
13.	851719	Other (Telephone sets)	502.56%
14.	851750	Other apparatus, for carrier-current line systems or digital line systems	-32.01%
15.	851790	Parts of Electrical Apparatus for Line Telephony or Line Telegraphy	349.79%
16.	851829	Other Loudspeakers	-65.98%

17.	852290	Other Parts and Accessories of Apparatus of Recording or Reproducing	26.26%
18.	852390	Other Prepared Unrecorded Media for Sound Recording	335.91%
19.	852540	Still image video cameras and other	245.87%
20.	852830	Video projectors	223.79%
21.	852910	Aerials and Aerial Reflectors of All Kinds; Parts for Use Therewith	-17.76%
22.	852990	Other Parts of Transmission Apparatus, Radar Apparatus or Television Receivers	194.11%
23.	853224	Fixed Capacitors, Ceramic Dielectric, Multilayer	37.32%
24.	853229	Other Fixed Capacitors	236.61%
25.	853329	Other Fixed Resistors	31.38%
26.	853340	Other Variable Resistors, Including Rheostats and Potentiometers	18.90%
27.	853400	Printed Circuits	25.09%
28.	853610	Fuses, for a Voltage Not Exceeding 1,000v	13.03%
29.	853641	Relays, for a Voltage Not Exceeding 60v	-3.01%
30.	853649	Other Relays, for a Voltage Not Exceeding 1,000v	59.97%
31.	853650	Switches, for a Voltage Not Exceeding 1,000v	8.69%
32.	853669	Plugs and Sockets, for a Voltage Not Exceeding 1,000v	110.18%
33.	853690	Other Apparatus for Making Connections to or in Electrical Circuits	-0.07%
34.	853710	Bases for Electric Control or the Distribution, Not Exceeding 1,000v	14.25%
35.	853941	Arc lamps	1234.88% *
36.	853949	Other (Ultraviolet Or Infrared Lamps)	8062.92% *
37.	854110	Diodes, Other than Photosensitive or Light Emitting Diodes	91.72%
38.	854129	Other Transistors, Other than Photosensitive Transistors	98.88%
39.	854130	Thyristors, Diacs and Triacs, Other than Photosensitive Devices	-25.93%
40.	854140	Photosensitive Semiconductor Devices; Light Emitting Diodes	43.56%
41.	854150	Other Semiconductor Devices	55.84%
42.	854160	Mounted Piezo-electric Crystals	75.84%
43.	854221	Digital	10.97%
44.	854389	Other (Machines and apparatus)	296.65%
45.	854390	Parts of Particle Accelerators, Audio Mixers, High Frequency Amplifiers	18.80%
46.	854419	Other Winding Wire	156.69%
47.	854430	Ignition Wiring Sets & Other Wiring Sets, for Vehicles, Aircraft or Ship	-1.01%
48.	854441	Other Electric Conductors, Fitted With Connectors, Not Exceeding 80v	22.74%
49.	854459	Other Electrical Conductors	32.70%
50.	854520	Carbon Brushes, for Electrical Purposes	-26.82%

Note: * - Outliers; Source: Author's Calculation

Figure 4. 3Estimates of Tariff Equivalent of Non-Tariff Measures* on Indian Imports of Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders from Philippines (2010-2014)



Note: Outliers – HS Product Code 853941 and 853949

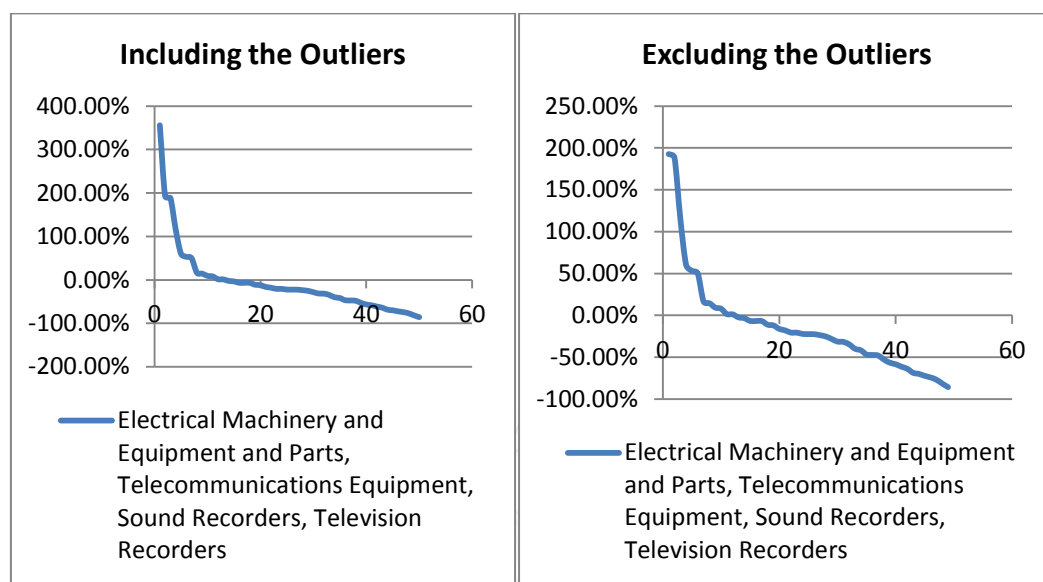
Table 4. 5 Estimates of Tariff Equivalent of Non-Tariff Measures on Indian Imports of Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders from Singapore (2010-2014)

Sl. No.	Prod Code	Product Description	Average (2010-14)
1.	850213	Generating Sets With Compression-ignition Engines, Exceeding 375kva	-20.64%
2.	850300	Parts, of Motors, of Generators, of Generating Sets, of Rotary Converters	16.44%
3.	850440	Static Converters	-63.86%
4.	850450	Inductor	115.93%
5.	850490	Parts, of Electrical Transformers, of Static Converters, of Inductors	188.42%
6.	850511	Permanent Magnets and Magnetized Articles, of Metal	355.87%
7.	850720	Electric storage batteries, incl separators, parts	-81.54%
8.	850780	Other Electric Accumulators	-76.90%
9.	851711	Line telephone sets with cordless handsets	-72.35%
10.	851719	Other (Telephone sets)	-74.23%
11.	851750	Other apparatus, for carrier-current line systems or digital line systems	192.65%
12.	851790	Parts of Electrical Apparatus for Line Telephony or Line Telegraphy	-58.43%
13.	852190	Other Video Recording or Reproducing Apparatus	-85.80%
14.	852390	Other Prepared Unrecorded Media for Sound Recording	-61.39%
15.	852510	Transmission Apparatus	-52.92%
16.	852520	Transmission Apparatus Incorporating Reception Apparatus	-47.38%
17.	852540	Still image video cameras and other	-70.04%
18.	852813	Black and white or other monochrome	-48.01%
19.	852821	Colour	60.23%

20.	852830	Video projectors	-22.22%
21.	852910	Aerials and Aerial Reflectors of All Kinds; Parts for Use Therewith	-31.71%
22.	852990	Other Parts of Transmission Apparatus, Radar Apparatus or Television Receivers	-41.72%
23.	853110	Burglar or Fire Alarms and Similar Apparatus	-39.92%
24.	853190	Parts of Electric Sound or Visual Signalling Apparatus (Bells, Sirens)	-22.52%
25.	853210	Fixed Capacitors, for Use in 50/60hz Circuits, Not Less than 0.5kvar	7.92%
26.	853222	Fixed Capacitors, Aluminium Electrolytic	1.43%
27.	853224	Fixed Capacitors, Ceramic Dielectric, Multilayer	-25.28%
28.	853229	Other Fixed Capacitors	53.12%
29.	853310	Fixed Carbon Resistors, Composition or Film Types	-22.45%
30.	853340	Other Variable Resistors, Including Rheostats and Potentiometers	-6.77%
31.	853400	Printed Circuits	-17.93%
32.	853620	Automatic Circuit Breakers, for a Voltage Not Exceeding 1,000v	-12.05%
33.	853641	Relays, for a Voltage Not Exceeding 60v	-23.73%
34.	853649	Other Relays, for a Voltage Not Exceeding 1,000v	1.14%
35.	853650	Switches, for a Voltage Not Exceeding 1,000v	-28.23%
36.	853669	Plugs and Sockets, for a Voltage Not Exceeding 1,000v	-11.17%
37.	853690	Other Apparatus for Making Connections to or in Electrical Circuits	9.25%
38.	853710	Bases for Electric Control or the Distribution, Not Exceeding 1,000v	-6.85%
39.	853890	Parts of Switches, Automatic Circuit Breakers, Relays or Connector	-34.62%
40.	854110	Diodes, Other than Photosensitive or Light Emitting Diodes	-68.69%
41.	854129	Other Transistors, Other than Photosensitive Transistors	-56.61%
42.	854140	Photosensitive Semiconductor Devices; Light Emitting Diodes	14.51%
43.	854160	Mounted Piezo-electric Crystals	-20.68%
44.	854210	Cards incorporating an electronic i	-46.82%
45.	854221	Digital	-16.24%
46.	854290	Parts of Electronic Integrated Circuits and Microassemblies	50.01%
47.	854389	Other (Machines and apparatus)	-2.44%
48.	854390	Parts of Particle Accelerators, Audio Mixers, High Frequency Amplifiers	-31.38%
49.	854441	Other Electric Conductors, Fitted With Connectors, Not Exceeding 80v	-3.40%
50.	854459	Other Electrical Conductors	-6.73%

Source: Author's Calculation

Figure 4. 4Estimates of Tariff Equivalent of Non-Tariff Measures* on Indian Imports of Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders from Singapore (2010-2014)



Note: Outlier – HS Product Code 850511

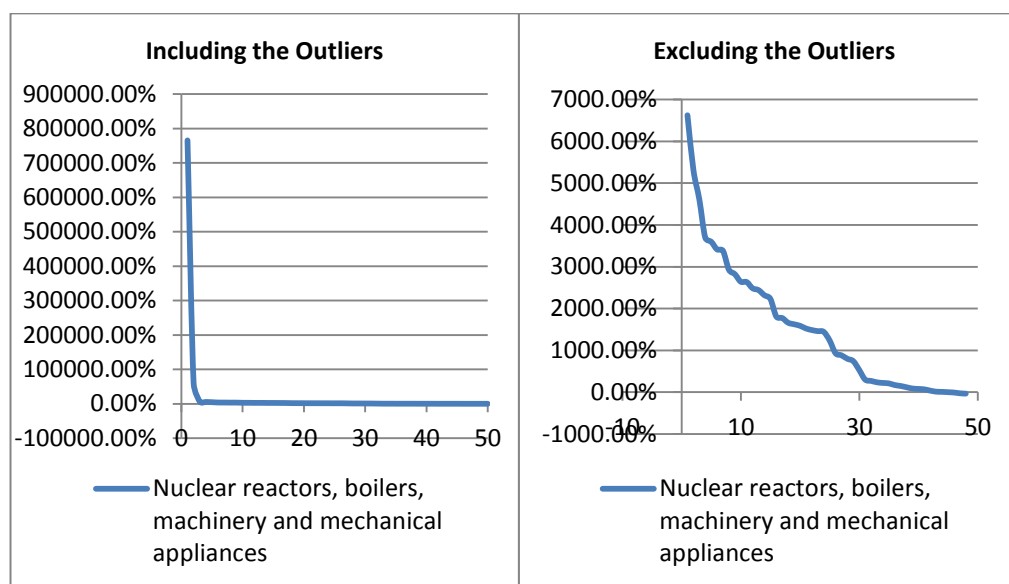
Table 4. 6 Estimates of Tariff Equivalent of Non-Tariff Measures on Indian Imports of Nuclear Reactors, Boilers, Machinery and Mechanical Appliances and Computers from Thailand (2010-2014)

Sl. No.	Prod Code	Product Description	Average (2010-14)
1.	840721	Outboard Motors	-0.41%
2.	840734	Reciprocating Piston Engines for Vehicles, Exceeding 1, 000cc	67.42%
3.	840820	Compression-ignition Internal Combustion Piston Engines for Vehicles	12.04%
4.	840991	Parts of Spark-ignition Internal Combustion Piston Engines	2442.06%
5.	840999	Parts of Compression-ignition Internal Combustion Piston Engines	2232.53%
6.	841330	Fuel, Lubricating or Cooling Medium Pumps	532.37%
7.	841360	Other Positive Rotary Displacement Pumps	117.14%
8.	841391	Parts of Pumps for Liquids	2634.68%
9.	841430	Compressors of a Kind Used in Refrigerating Equipment	2823.90%
10.	841459	Other Fans	932.09%
11.	841480	Other Air Pumps and Air or Gas Compressors; Other Hoods	269.86%
12.	841490	Parts of Air or Vacuum Pumps, Air or Other Gas Compressors, Fans & Hoods	1809.50%
13.	841510	Air Conditioning Machines, Window or Wall Types, Self-contained	220.40%
14.	841582	Other Air Conditioning Machines, Incorporating a Refrigerating Unit	-35.61%
15.	841583	Air Conditioning Machines, Not Incorporating a Refrigerating Unit	-8.73%
16.	841590	Parts of Air Conditioning Machines	2642.50%
17.	841810	Combined Refrigerator-freezers, Fitted With Separate External Doors	36.86%

18.	842123	Oil or Petrol-filters for Internal Combustion Engines	4614.79%
19.	842139	Other Filtering or Purifying Machinery and Apparatus for Gases	1459.85%
20.	842199	Parts for Filtering or Purifying Machinery, for Liquids or Gases	3414.57%
21.	842810	Lifts and Skip Hoists	236.05%
22.	842820	Pneumatic Elevators and Conveyors	170.22%
23.	842839	Other Continuous-action Elevators and Conveyors,for Goods or Materials	148.36%
24.	842890	Other Lifting, Handling, Loading or Unloading Machinery	210.54%
25.	842952	Machinery With a 360degrees Revolving Superstructure	-26.59%
26.	843131	Parts of Lifts, Skip Hoists or Escalators	2929.83%
27.	843139	Parts of Other Lifting, Handling, Loading or Unloading Machinery	3380.83%
28.	843351	Combine Harvester-threshers	301.29%
29.	843390	Parts of Harvesting or Threshing Machinery and Grass or Hay Mowers	1238.74%
30.	843710	Machines for Cleaning, Sorting or Grading Seed or Grain	7.37%
31.	843780	Machinery Used in the Milling Industry or for the Working of Cereals	87.23%
32.	845090	Parts of Household or Laundry-type Washing Machines	3697.56%
33.	845210	Sewing Machines of the Household Type	742.53%
34.	845430	Casting Machines	77.46%
35.	845590	Other Parts of Metal-rolling Mills	3601.23%
36.	846630	Dividing Heads and Other Special Attachments for Machine-tools	2485.69%
37.	846729	Hand tools with self contained motor	1661.12%
38.	847010	Electronic Calculators, Operation Without an External Source of Power	765696.53 %*
39.	847160	Input or output units, whether or not containing storage units in the same housing	5320.61%
40.	847170	Storage units	1773.62%
41.	847330	Parts and Accessories of the Automatic Data Processing Machines	1588.61%
42.	847790	Parts of Extruders or Other Moulding Machines for Rubber or Plastic	882.52%
43.	847989	Air-coolers, Air Purifiers of Other Machines and Mechanical Appliances	798.55%
44.	847990	Parts of Other Machines and Mechanical Appliances	2318.46%
45.	848079	Other Moulds for Rubber or Plastics	1624.74%
46.	848180	Other Valves and Other Appliances for Pipes, Tanks, Vats or the Like	1443.85%
47.	848210	Ball Bearings	60654.50% *
48.	848350	Flywheels and Pulleys, Including Pulley Blocks	6624.40%
49.	848390	Parts of Transmission Shafts, Cranks, Bearing Housings, Gears or Clutch	1486.08%
50.	848410	Gaskets and Similar Joints of Metal Sheetting	1524.54%

Note: * - Outliers; Source: Author's Calculation

Figure 4. 5 Estimates of Tariff Equivalent of Non-Tariff Measures on Indian Imports of Nuclear Reactors, Boilers, Machinery and Mechanical Appliances and Computers from Thailand (2010-2014)



Note: Outliers – HS Product Code 847010 and 848210.

Table 4. 7 Estimates of Tariff Equivalent of Non-Tariff Measures on Indian Imports of Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders from Vietnam (2010-2014)

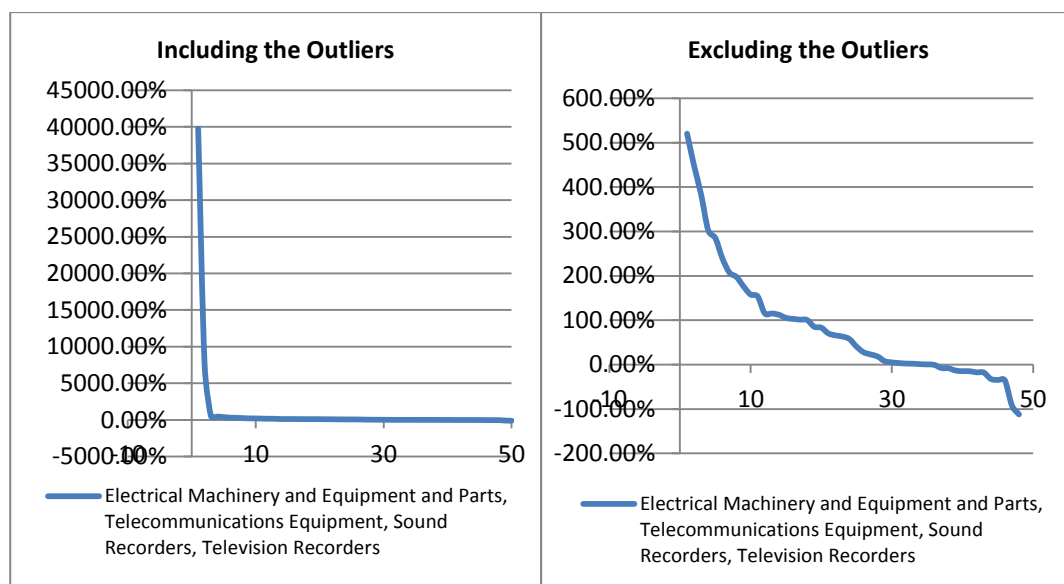
Sl. No.	Prod Code	Product Description	Average (2010-14)
1.	850110	Motors of an Output Not Exceeding 37.5w	-92.07%
2.	850120	Universal Ac/dc Motors of an Output Exceeding 37.5w	-14.77%
3.	850131	Dc Motors, Dc Generators, of an Output Not Exceeding 750w	-35.50%
4.	850132	Dc Motors, Dc Generators, Output Exceeding 750w But Not Exceeding 75kw	447.48%
5.	850140	Other Ac Motors, Single-phase	-32.07%
6.	850151	Ac Motors, Multi-phase, of an Output Not Exceeding 750w	285.24%
7.	850152	Ac Motors, Multi-phase, Output Exceeding 750w But Not Exceeding 75kw	207.32%
8.	850153	Ac Motors, Multi-phase, of an Output Exceeding 75kw	-112.20%
9.	850213	Generating Sets With Compression-ignition Engines, Exceeding 375kva	40.43%
10.	850220	Generating Sets With Spark-ignition Internal Combustion Piston Engines	39759.69 %*
11.	850300	Generating Sets With Spark-ignition Internal Combustion Piston Engines	1.04%
12.	850431	Other Transformers, Power Handling Capacity Not Exceeding 1kva	239.50%
13.	850440	Static Converters	27.80%
14.	850450	Inductor	100.58%
15.	850490	Parts, of Electrical Transformers, of Static Converters, of Inductors	197.49%
16.	850650	Primary Cells And Primary Batteries, Lithium	2.39%
17.	850680	Other primary cells and primary bat	7707.68%*

18.	850710	Lead-acid Accumulators, of a Kind Used for Starting Piston Engines	57.54%
19.	850720	Other Lead-acid Accumulators	70.39%
20.	850780	Other Electric Accumulators	-13.26%
21.	850910	Vacuum Cleaners, With Self-contained Electric Motor	520.22%
22.	851190	Parts of Ignition , Starting Equipment, for Internal Combustion Engine	22.90%
23.	851290	Parts, of Electrical Lighting or Signalling Equipment, of Defrosters	0.46%
24.	851711	Line telephone sets with cordless handsets:	83.29%
25.	851719	Other	105.34%
26.	851750	Other apparatus, for carrier-current line systems or for digital line systems	63.32%
27.	851790	Parts of Electrical Apparatus for Line Telephony or Line Telegraphy	65.88%
28.	851821	Single Loudspeakers, Mounted in Their Enclosures	157.86%
29.	851829	Other Loudspeakers	176.08%
30.	851830	Headphones, Earphones and Combined Microphone/speaker Sets	-17.74%
31.	851850	Electric Sound Amplifier Sets	-34.61%
32.	852520	Transmission Apparatus Incorporating Reception Apparatus	153.70%
33.	852540	Still image video cameras and other	3.51%
34.	852812	Colour	103.10%
35.	852910	Aerials and Aerial Reflectors of All Kinds; Parts for Use Therewith	5.06%
36.	852990	Other Parts of Transmission Apparatus, Radar Apparatus or Television Receivers	101.42%
37.	853190	Parts of Electric Sound or Visual Signalling Apparatus (Bells, Sirens)	-14.73%
38.	853229	Other Fixed Capacitors	302.23%
39.	853650	Switches, for a Voltage Not Exceeding 1,000v	85.30%
40.	853669	Plugs and Sockets, for a Voltage Not Exceeding 1,000v	382.45%
41.	853710	Bases for Electric Control or the Distribution, Not Exceeding 1,000v	18.16%
42.	853810	Boards, Panels, Consoles, Desks, Cabinets and Other Bases	115.17%
43.	853890	Parts of Switches, Automatic Circuit Breakers, Relays or Connector	-7.55%
44.	854221	Digital	-8.01%
45.	854419	Other Winding Wire	112.36%
46.	854420	Co-axial Cable and Other Co-axial Conductors	115.40%
47.	854430	Ignition Wiring Sets & Other Wiring Sets, for Vehicles, Aircraft or Ship	7.67%
48.	854441	Other Electric Conductors, Fitted With Connectors, Not Exceeding 80v	-0.52%
49.	854459	Other	2.13%
50.	854520	Carbon Brushes, for Electrical Purposes	-17.37%

Note: * - Outliers; Source: Author's Calculation.

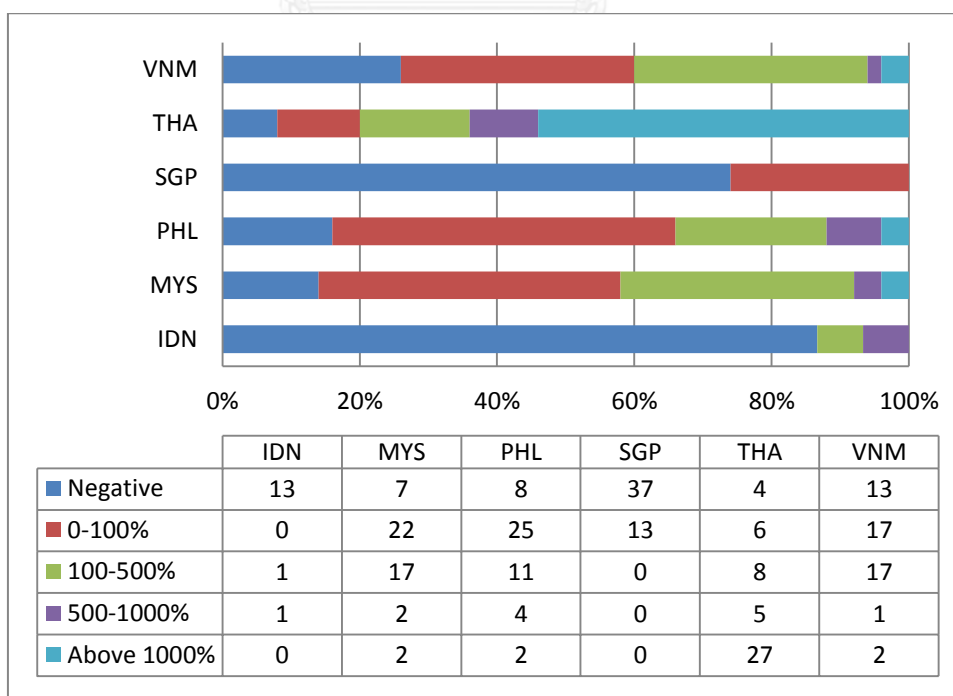
The composition of estimates of TE of NTMs on Indian Imports from ASEAN Countries is shown in Figure 4.7. The differing intensity of NTMs can be summarised as follows: (i) HS Code 85: Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders. Out of 50 products (a) 22 fall under 0-100% category in case of Malaysia; (b) 25 fall under 0-100% in case of Philippines; (c) 37 fall under negative category in case of Singapore; (d) 17 each fall under 0-100% and 100-500% category in case of Vietnam. (ii) HS Code 84: Nuclear Reactors, Boilers, Machinery and Mechanical Appliances and Computers. Out of 50 products, 27 fall in the category of above 100% in case of Thailand. (iii) HS Code 15: Animal or Vegetable Fats and Oils. Out of 15 products of imports, 13 fall under negative category in case of Indonesia.

Figure 4. 6 Estimates of Tariff Equivalent of Non-Tariff Measures on Indian Imports of Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders from Vietnam (2010-2014)



Note: Outliers – HS Code 850220 and 850680.

Figure 4. 7 Composition of Estimates of Tariff Equivalent of Non-Tariff Measures on Indian Imports from ASEAN Countries



Note: HS Codes (a) IDN – 15; (b) MYS – 85; (c) PHL – 85; (d) SGP – 85; (e) THA – 84; VNM – 85.

4.1.1.1. Negative NTMs – What Do They Imply?

Negative TE of NTMs implies India's import from the ASEAN member country under consideration is as much cheaper in relation to import from world. Negative TE of NTMs is due to the following reasons, explained sector specifically.

(a) Indonesia – HS Code 15: Animal or Vegetable Fats and Oils

In case of Indonesia, out of top 16 Indian import products, 13 products incur negative TE of NTMs. The reasons are: Firstly, oversupply in major edible oil producing countries such as Malaysia and Indonesia has led to consistent decline in prices, thus, making their imports cheaper.

Secondly, Indian development and planning literature constantly have referred to addressing one major short fall in India nutritional requirement, i.e. edible oils. In spite, of price and other support mechanisms oil seed production in India is still unable to meet the needs of the Indian population. Therefore limited strategies were adopted earlier on to make up for this shortfall²⁶ and to meet rising domestic consumption by import of edible oils and oilseeds. India is world's largest importer of edible oils. Such a sharp increase in imports adversely affected domestic oilseed cultivation. As cheaper imports withheld farmers from selling oilseeds at better prices, the farmers incurring losses diverted to other profitable crops. Oilseed production is deterred by area shortage and monsoon. This, in turn, has not only led to shortage of oilseeds but also has forced the Indian oilseed crushers to underutilize their crushing capacity, thus, exacerbating imports.

Thirdly, Soyabean, both black and yellow; Sunflower seeds; Safflower oil and Copra or Coconut (see HS codes 150710, 151211, 151311 respectively in Table 4.2) are four out of twenty-five *kharif* crops (monsoon crops) for which Indian government gives minimum support prices (MSPs). MSPs are price subsidies given to farmers to insure against losses incurred due to low market prices.

Hence, as a combined consequence, India is experiencing significant growth in import of animal and vegetable fats and oils especially edible oils is in excessive supply and at cheaper prices mainly from Indonesia and Malaysia, among the top producers in the world.

²⁶ In the immediate Post-independence period these short falls were met through food aid from western countries such as from the US under US *Public Law (PL) 480*. Gradually as India opened up it realized that the short fall can be met through imports.

(b) Singapore – HS Code 85: Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders

In case of Singapore, out of top 50 Indian import products, 37 products incur negative TE of NTMs. Due to the reasons explained below India-Singapore trade is reaping economies of scale and thus, the average costs firms incur are relatively less. This makes Indian imports from Singapore relatively cheaper in relation to those from world.

Firstly, India shares a long history of labour migration from British times, both being British colonies. Traditional Indian exporters from the South of India during colonial times who exported mostly milled cloth from India textile mills, became latter day entrepreneurs and trade facilitators between in India and Singapore.

Secondly, India and Singapore have signed a CEPA which is in effect since June 2005. Singapore is one of India's top 10 trading partners and one of top destinations for Indian outward investments. The outward FDI stood at US\$ 37.4 billion in 2015 which was less than a US\$1 in 2004-05. Similarly, Singapore was India's 2nd largest investor in 2015.

Thirdly, the India-Singapore CEPA is of relative greater depth in terms of coverage of areas (see Table 1.4) For instance, trade facilitation, SPS/TBT measures, services, investment, transport related provisions are covered unlike their exclusion in the ASEAN-India FTA.

Fourthly, Singapore is one of the largest trans-shipment hubs in the world. Thus, many third party countries export goods to India using the India-Singapore CEPA.

Fifthly, considering the number of products incurring negative TE of NTMs, import of products under HS Code 85 from Singapore is relatively cheaper when compared to other ASEAN economies. This is because Singapore has held a major share in the electronics industry since 1980s which spread to Thailand, Malaysia and China in 1990s.

(c) Malaysia, Philippines and Vietnam – HS Code 85: Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders; Thailand – HS Code 84: Nuclear Reactors, Boilers, Machinery and Mechanical Appliances and Computers

In case of Malaysia, Philippines and Vietnam, out of top 50 Indian import products, 7, 8 and 13 products incur negative TE of NTMs respectively. In case of Thailand, out of top 50 Indian import products of nuclear reactors, boilers, machinery and mechanical appliances and computers only 4 products incur negative TE of NTMs. In other words, importing the products under consideration from these countries is as

much expensive in relation to their imports from the world. The price differences due to NTMs are because of distance and relatively inadequate port facilities unlike Singapore. Thus, transport costs are relatively higher for products originating from Thailand, Malaysia, Philippines, and Vietnam than SGP.

According to UNCTAD classification there are sixteen categories of NTMs (UNCTAD, 2012). These can be arranged into three broad categories (Staiger, 2012). They are those on imports, those on exports and those imposed domestically. The first two are imposed at the border and last one behind-the-border. The contributions of these categories to the TE of NTMs estimated above, especially those that are exorbitantly high, are mixed, vague and complex.

However, following are some of the explanations for why India's imports of products under consideration from ASEAN countries are relatively expensive. (i) The sectors of import products considered in this study from respective ASEAN countries are essentially those in which these countries hold comparative advantage. Moreover, these are the sectors in which the countries rank high not only in the region but globally. For instance, Thailand was ranked 18th and 3rd in the world for export of moulding boxes and dies for drawing and extruding metal (BOI, 2016). Malaysia is one of the top 20 exporting countries in the world where electronics industry alone holds a share of 33% of exports (MIDA). This, evidently, is threatening India in terms of competition for domestic firms.

(ii) As reflected by Doing Business Reports India's performs poorly in terms of behind-the-border measure/domestic regulations related to labour, technical, product standards and mainly the cascading tax structure and other administrative charges. But the estimated TE of NTMs is relative figure, that is, these NTMs are in excess of those incurred by India's imports from world. The reason behind exorbitantly high NTMs in case of ASEAN could possibly be due to a surge in NTMs due to (a) falling tariffs facilitated by ASEAN-India FTA; (b) the process of liberalization of trade between ASEAN-India is not whole in terms of policy coverage, that is, tariffs are falling but clear strategies addressing NTMs are inadequate.

4.5.2. Nature of ASEAN-India trade related NTMs

Based on descriptive data the nature of the NTMs in the ASEAN-India context is analysed under following broad themes.

i. Types of non-tariff measures in the context of India-ASEAN trade

ASEAN: Among the major non-tariff barriers to trade reported by ASEAN member countries against India include red tape, old rules and redundant regulations²⁷, consistent poor ranking in ease of doing business²⁸.

India: Referring to non-tariff barriers reported by India against ASEAN members, a survey (FICCI, 2013) on impact of ASEAN-India FTA on Indian industry reported that cumbersome registration process of pharmaceutical products and complex custom clearance procedures were making Indian products uncompetitive in the South East Asian countries²⁹. Further, the survey identifies the impediments to India's business in ASEAN countries. Table 4.8 below points to the varying specific requirements in each member countries of ASEAN and the sectors affected by them.

Table 4. 8 Impediments to India's Business in ASEAN Countries

Indicators	Sectors Affected	Country
A. INITIATING BUSINESS		
Specific quota for your sector	Pharmaceutical, Automotive	Thailand
Bureaucratic hurdles and red-tapism	Plastic	Philippines, Thailand
Licensing process	Plastic, Pharmaceutical, Banking, Insurance and Financial services	Thailand, Malaysia
Registration process	Pharmaceutical, Chemical Product	Malaysia
Technical standards/Qualification norms	Automotive	
Labor norms (Work Visas, Work Permit etc.)	Consulting, Infrastructure and Construction, Textile, Apparel and Accessories, Banking, Insurance and Financial Services	Thailand, Vietnam, Indonesia
Environmental Clearances	Automotive	Malaysia
B. FINANCE AND TAX REGIME ISSUES		
Banking Infrastructure for Letter of Credit	Chemicals	Myanmar, Cambodia
Movement of funds to and fro India	Consulting, Infrastructure and Construction, Automotive, Chemicals	Myanmar, Cambodia
Local Taxes, Double Taxation	Plastic	Thailand, Philippines
C. REGULATORY ENVIRONMENT ISSUES		
Transparency in Policies and Regulations	Automotive, Plastic	Philippines
Enforcing contracts/Agreements – Legal Infrastructure	Others	Indonesia, Philippines, Cambodia, Lao, Myanmar, Vietnam

²⁷ "Malaysia says non-tariff barriers hinder ASEAN-India trade ties", The Hindu Business Line, August 31, 2014

²⁸ Doing Business Report Rankings

²⁹ Impact of ASEAN-India Free Trade Agreement on Indian Industry, A FICCI Survey, 2011

Local Value Addition Norms	Pharmaceutical	
Rules of Origin	Pharmaceutical, Automotive, Chemical Product	Malaysia, Singapore, Philippines, Vietnam, Thailand
D. SALES/EXPORTS AND IMPORT DISTRIBUTION ISSUES		
Customs Rules and Practices	Healthcare, Plastic, Agriculture Products, Others	Myanmar, Indonesia, Vietnam
Import Duties	Pharmaceutical	Malaysia, Singapore, Thailand, Philippines, Vietnam
Connectivity (Land/Air/Sea)	Chemicals, Textile, Apparel and Accessories, Automotive, Plastic	Philippines, Indonesia, Cambodia, Vietnam, Myanmar
Logistics Cost	Automotive, Chemicals, Mining and Minerals	Myanmar, Indonesia, Vietnam
Packaging Norms	Pharmaceutical	Myanmar, Vietnam

Sources: Business Beyond Barriers, FICCI Survey, October, 2013

ii. Sanitary and Phyto Sanitary (SPS) and Technical Barriers to Trade (TBT) Measures

Consistent with the argument that as economies grow and incomes increase, public policies expand, economic growth and development and advancement in technology has resulted in increased consumer demand for the safety and standards goods. This has led to rise in SPS/TBT measures and are the most frequently observed NTMs (WTR, 2012).

A business survey (UNCTAD, 2007) of selected developing countries included India, Thailand, and Philippines. India specific findings of the survey reported (a) In case of exporting companies, the most prevalent NTMs faced were TBT measures followed by SPS measures, finance measures and other technical measures, necessarily in that order. (b) In case of importing companies, TBT measures affecting imports of gems and jewellery, metal and textiles; followed by SPS measures affecting imports of food and medical equipment; and para-tariff measures, affecting furniture and engineering equipment, were the most frequently applied NTMs in India. Other NTMs included finance measures, other technical measures and export-related measures. Arbitrary implementation in most TBT policies, and outright obstruction in the case of SPS measures were also reported.

Among others, products sourced from Myanmar and Malaysia reported SPS measures, products of Thailand reported TBT tariff measures. Products imported from the Thailand and Indonesia were reported to have faced para-tariff measures. ASEAN members affected by procedural obstacles were Thailand, Myanmar and Singapore and those affected by inefficiency included Myanmar. Product wise, a large number of SPS requirements and TBT measures were reported on medical equipment, rice and precious stones respectively.

SPS/TBT measures, though have positive implications to advanced economies, do affect developing countries. The majority of importers that reported SPS/TBT requirements indicated that it was financially not feasible for them to comply with the SPS/TBT norms.

iii. How did non-tariff measures evolve during the financial crisis?

One of the prominent dimensions in which usage of NTMs has evolved is financial crisis management. As a result of multilateral, regional, bilateral and unilateral trade initiatives reducing tariffs on trade, tariffs are no longer appeal as a means of protection. According to *WTR* (2012), NTMs seem to have risen in the mid-1980s, but between 2000 and 2008 they remained flat and rose again after the financial crisis. In order to bailout the crumbling financial institutions advanced countries provide subsidies, special loans and guarantees, funds conditioned on lending towards the home market, subsidies conditional upon purchase of domestically produced products and so on. NTMs which are less transparent compared to tariffs encourage the governments to go for such measures. These measures carry the threat of “beggar-thy-neighbors³⁰”.

With reference to ASEAN and India, a number of NTMs were imposed during the recent financial crisis affecting each other's' trade (see Table 4.10). India's usage of NTMs as cover during the downturn is significantly higher than the ASEAN countries.

Another indicator of usage of NTMs during crisis is the percentage of NTMs of the implemented state measures that harm foreign commercial interests. The figure for Indonesia is 91.49% and India is 82.72% (Simon, 2012). During the crisis India, Indonesia and Vietnam have used NTMs extensively, the number of measures were 321, 81 and 50 respectively (see Table 4.9).

³⁰ It is a situation where trade-restrictive measures taken by one country can trigger similar actions by other countries, leading to a spiral of ever more threatening restrictions, World Trade Report 2011.

Table 4. 9 State Measures³¹ Taken during the Current Economic Downturn

Number of harmful measures (red ³² and amber ³³) implemented, by type	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	India
Bail out / state aid measure	0	1	4	0	0	0	0	0	1	4	17
Competitive devaluation	0	0	0	0	0	0	0	0	0	1	0
Consumption subsidy	0	0	0	0	0	0	0	0	0	0	0
Export subsidy	0	0	1	0	2	0	0	0	1	1	23
Export taxes or restriction	0	0	15	0	1	2	0	0	2	9	15
Import ban	0	0	8	0	1	0	1	0	0	0	6
Import subsidy	0	0	1	0	1	0	0	0	1	0	1
Intellectual property protection	0	0	0	0	0	0	0	0	0	0	0
Investment measure	0	0	6	0	4	1	1	2	2	3	10
Local content requirement	0	0	3	0	4	0	0	0	0	0	88
Migration measure	0	0	1	0	2	0	0	12	0	5	3
Non-tariff barrier (not otherwise specified)	0	0	12	0	4	0	0	0	2	3	9

³¹ Caution need to be exercised while interpreting data as the state measures include – bail out/state aid measure, competitive devaluation, consumption subsidy, export subsidy, export taxes or restriction, import ban, import subsidy, intellectual property protection, investment measure, local content requirement, migration measure, non-tariff barrier (not otherwise specified), other service sector measure, public procurement, quota (including tariff rate quota), SPSs, state trading enterprise, state controlled company, subnational government measure, tariff measure, TBTs, trade defense measures (AD, CVD, safeguard) and trade finance among others. However, tariff measures as a percentage of all the state measures used is very low.

³² According to Global Trade Alert database, the “red” refers to the measure that has been implemented and almost certainly discriminates against foreign commercial interests.

³³ The “amber” refers to the measure that has been implemented and may involve discrimination against foreign commercial interests; or the measures that have been announced or is under consideration and would almost certainly involve discrimination against foreign commercial interests.

Other service sector measure	0	0	3	0	1	0	0	0	1	0	0
Public procurement	0	0	4	0	0	0	0	0	1	1	6
Quota (including tariff rate quotas)	0	0	4	0	0	0	0	0	0	1	2
Sanitary and Phytosanitary Measure	0	0	2	0	0	0	0	0	0	0	0
State trading enterprise	0	0	0	0	0	0	0	0	0	0	0
State-controlled company	0	0	1	0	0	0	0	0	0	0	1
Sub-national government measure	0	0	0	0	0	0	0	0	0	0	0
Tariff measure	0	0	9	0	3	0	1	2	1	24	33
Technical Barrier to Trade	0	0	3	0	0	0	0	0	0	0	0
Trade defence measure (AD, CVD, safeguard)	0	0	15	0	7	0	4	0	11	0	127
Trade finance	0	0	1	0	2	0	0	0	0	2	84
Total	0	1	81	0	18	3	5	16	18	50	321

Source: Global Trade Alert Database, data extracted on 16 September 2014

Table 4. 10 ASEAN and India's Mutually Affecting State Measures

ASEAN jurisdiction's commercial interests affected by India's state measures		ASEAN jurisdictions implementing state measures affecting India's commercial interests	
Thailand	25	Thailand	01
Malaysia	18	Malaysia	03
Singapore	17	Singapore	02
Indonesia	15	Indonesia	16
Vietnam	10	Vietnam	09
Philippines	10	Thailand	01
Cambodia	07	Malaysia	03
Myanmar	06	Singapore	02
Brunei	01		

Source: Country-by-Country Reports, Global Trade Alert Report, 2012

4.6. Policy Recommendations

From the viewpoint of current developments in global trade in general and in those in the context of ASEAN-India economic integration, NTMs require well researched and well defined policies.

The major problem in dealing with NTMs is their non-transparency and complexity. As of now, policies to address NTMs in ASEAN-India free trade framework are lacking or inadequate. Trade costs in the form of NTMs appear nebulous, thus, tackling them is a tedious task. To ensure transparency, based on the findings and in view of the inadequate institutional strategies, this chapter recommends following policy measures to effectively address NTMs.

- 4.1.2. Facilitate collection, classification and analysis of NTMs bilaterally;
- 4.1.3. Identification and categorization of NTMs in to (i) those reducible; (ii) those removable; (iii) those manageable;
- 4.1.4. Expand NTM specific area coverage under ASEAN-India free trade agreement framework or sign mutual recognition agreements (MRAs) bilateral and regional level towards harmonization of NTMs;
- 4.1.5. In recognition of the initiatives taken by ASEAN countries towards harmonization of NTMs within the bloc, India should negotiate strategies to join or align with ASEAN;

4.1.6. An ASEAN-India online portal on NTMs should be opened. The portal will facilitate reporting, monitoring and elimination/management of NTMs which will be managed and coordinated by the member countries;

The challenges or constraints to above specified policy recommendations can be in the form of financial resources as the recommendations are research and resource intensive, requires technical expertise. Thus mobilizing funds from private and public channels are essential.

4.7. Conclusion

The significance gained by NTMs in the 21st century as more of public policy instruments than that of protection adds to their complexity. This has increased the need to understand and tackle them carefully for the impact they are capable of having on trade flows.

In the absence of adequate academic literature, the chapter estimates TE of NTMs and examines the nature and extent of NTMs in ASEAN-India trade. Main findings of the chapter can be summarized as follows (a) The TEs of NTMs differ among the ASEAN member countries and the sectors under consideration indicating varying motives behind imposition of NTMs by India; (b) In consistence with the general trend, NTMs account for a major portion of bilateral trade costs. (c) With the economic growth and rising incomes the ASEAN and India do use and deal with the challenges of SPS/TBT measures; (d) At the policy lever and among business groups focus NTM related concerns are on rise; (e) India and ASEAN, following the trend elsewhere, have used NTMs to cover from economic downturn, mutually affecting each other.

ASEAN-India FTA, a milestone in the two decade economic partnership, has allowed tariff reduction and elimination. But NTMs continue to restrict trade and perhaps they might grow in intensity and complexity in future. Thus, the process integration is not whole and systematic. Unaddressed NTMs are more likely to defeat the ASEAN-India FTA. Recognition of market isn't enough, ensuring access to the market is critical.

Chapter 5: Conclusion and Policy Recommendations

5.1. Introduction

This thesis has attempted to examine the question, how well tailored is the ASEAN-India Free trade Agenda, while keeping in perspective the country specific characteristics of India and ASEAN member countries. In the context of the changing dynamics of global trade the rationale of the thesis is based on looking at how central are Asian emerging market economies (EMEs) to the evolving global trade patterns and trends. In this context, three different aspects of ASEAN-India regional economic integration were analyzed.

This conclusion chapter is structured as follows. Section 5.2 provides a summary of the chapters and answers to the research questions raised. Section 5.3 recommends specific policies and future strategies based on implied policy perceptions that are in coherence with the answer to the research questions and the thesis statement. Section 5.5 enlists the limitations of the thesis while section 5.6 provides directions for future research.

5.2. Answers to Chapter-specific Research Questions and Their Implications

A. Chapter 2: ASEAN-India Free Trade Agreement: An Ex-Post Impact Assessment

This chapter is an ex-post impact assessment of ASEAN-India Free Trade Agreement (AIFTA) in effect as of January 2010. The assessment consists of two parts and uses an adapted version of the Lloyd and McLaren (2004) model. First part consists of an ex-post impact assessment of AIFTA on the leading trade sector, that is, Mineral Fuels, Oils and Related Products, as per 2 digit HS 2002 classification, the commodities analyzed subsequently are at 4 digit level. Second part verifies if the ex-ante projection of negative impact of AIFTA on Indian plantation sector/commodities, at 6 digit HS 2002 classification, holds true. Below are the answers to the research questions.

Major research questions:

- (i) What is the ex-post impact of ASEAN-India FTA on the leading trade sector, that is, Mineral Fuels, Oils and Related Products?

The ex-post impact of the FTA shows (a) change in trade volume is negative; (b) change in terms trade is positive; (c) combined welfare effects are indecisive.

(ii) Do the ex-ante projection of negative impact of ASEAN-India FTA on Indian plantation sector/commodities hold true?

The ex-ante projection of negative impact (a) holds true in case of plantation commodities such as black tea, pepper and palm oil while (b) holds false in case of coffee.

Minor research question:

(iii) In the recent past, doubts have been raised by government representatives, think-tanks and business groups about the effectiveness of the FTAs signed by India over the last decade. The major concerns include increase in imports coupled with stagnation in exports of India, inability of the manufacturing sector to take advantage of the FTAs, inverted duty structure observed in many sectors that are discouraging domestic value addition, among others. Do these observations prove an exception to the FTA with ASEAN?

The FTA with ASEAN is no exception to these observations, though underlying reasons vary in case of India's trade with ASEAN economies.

India's loss in trade volume due to the ASEAN-India FTA, is much higher than the gain through improved intra-union terms of trade, that is, it compensates up to 24% of the loss. Due to inadequate data the combined welfare gains remain inconclusive. On an average (2004-2014) ASEAN holds a share of nearly 19% of India's exports of mineral fuels, oils and related products to the world, whereas, on an average (2004-2014) 3.37% of India's imports from the world is sourced from ASEAN. Therefore, mineral fuels, oils and related products being the largest component of total trade, the loss will add up to the already high and growing trade deficit with ASEAN.

The negative impact of the FTA on plantation commodities such as black tea, pepper and palm oil, both crude and other, which the chapter empirically confirms implies the following. One, due to increasing cheap imports, Indian plantation farms will incur losses affecting their welfare. Two, the losses carry the risk of forcing the farmers to quit the cultivation of these crops to some other remunerative crops. Such a move would create a short fall in supply to meet domestic consumption. Mainly because a major portion of these crops is consumed domestically while only small percentage is exported. Third, since ASEAN countries are destinations for a significant Indian plantations exports and a source of imports, especially palm oil and pepper, the negative impact will add to the trade deficit which is already considerably high.

The concern about India being not successful in gaining from the FTAs, to which ASEAN is no exception as per the findings of this chapter, is rooted in India's domestic conditions not being ripe to reap the gains that flow from FTAs.

It is equally important to note that significant trade barriers in the form of NTMs continue to deny or restrict access to the markets. In other words, the ambitious ASEAN-India FTA is defeated by the presence of unaddressed NTMs. For instance, consider Indian import products under HS code 84 - Nuclear Reactors, Boilers, Machinery and Mechanical Appliances and Computers from Thailand studied in chapter 4. Out of top 50 products, 27 incur an average (2010-2014) of more than 1000% of NTMs in comparison to the NTMs incurred by import of same products from world.

Moreover, FTA utilization rate depends on several factors such as ease of compliance, cost of compliance, access to information, among others. Studies have shown that firms choose to forgo lower tariff rates offered by FTAs when procedural compliance and cost of compliance are higher than the tariff margins FTAs ensure.

B. Chapter 3: India-ASEAN Intra-Industry Trade in Manufactures: An Empirical Assessment

This chapter estimates tariff equivalent of NTMs on Indian imports from ASEAN in selected sectors and analyses their nature (2010-2014). The chapter adopts both quantitative and qualitative approaches. The estimates of tariff equivalent of NTMs are obtained using relative price differences of Indian imports from six individual ASEAN member countries and world. Qualitative analysis uses contextual, descriptive data, drawn from academic literature, reports by government and international institutions and business surveys, national and international databases. Below are the answers to the research questions.

Major research question:

- i) What are the patterns and determinants of India's IIT in manufactures with ASEAN Countries (1993-2013)?

(a) There are no set patterns in India's IIT in manufactures with individual ASEAN countries; (b) There are significant variations in the observed patterns and determinants of India's bilateral IIT with the six ASEAN member countries and they vary among the four product groups under manufactures.

Minor research question:

ii) What change, if any, can be observed in product composition? Did the technology gap shrink? What was the impact of the ASEAN-India FTA on IIT?

- (a) Since 2003 the product composition has been changing with a considerable growth in India's export share of capital goods; (b) The technology gap didn't shrink, evidence shows the existence of significant technological dissimilarity; (c) The impact of the ASEAN-India FTA on IIT is insignificant in case of each of the six ASEAN countries.

There are no set patterns in India's IIT in manufactures with individual ASEAN countries. These can be emerging. Suffice it to state that there are evident inter-temporal transitions in trade patterns favoring IIT that are evolving. IIT is not a substitute for trade but an outcome of evolving nature of trade. IIT results from consumer's preference for variety and economies of scale. These two determinants of IIT are *processes* (and not automatic outcomes) that evolves over a long-term as per capita income improves and average costs of production decrease respectively. IIT is an outcome of broad policies (and not one determinant such as the FTA) that require long gestation period to translate into real policy objectives.

The significant variations in the observed patterns and determinants of India's bilateral IIT with the six ASEAN member countries are due to the structural differences; varying levels of economic development, historical relations, distance/transport costs, degree of openness, bilateral FTAs, role of MNCs these economies host, among others.

The variation of IIT among the four product groups under manufactures is determined by the ability of these economies to diffuse the technology that comes along with trade and investment. Further, India being a federal state, geographical, regional/state-wise variations in industrial policies have also to be factored. Thus, a nation-wide conclusion based on indicators that are national averages, the entire *process* of trading pattern favoring IIT may not have emerged clearly in the empirical assessment. Nonetheless, the inter-temporal changes such as trade composition among others are evidence to the emerging bilateral IIT between India and ASEAN.

C. Chapter 4: ASEAN-India Trade: An Assessment of Non-Tariff Measures

This chapter estimates tariff equivalent of NTMs on Indian imports from ASEAN in selected sectors and analyses their nature. The chapter adopts both quantitative and qualitative approaches. The estimates of tariff equivalent of NTMs are obtained using

relative price differences of Indian imports from six individual ASEAN member countries and the world. Qualitative analysis uses contextual, descriptive data, drawn from academic literature, reports by government and international institutions and business surveys, national and international databases. Below are the answers to the research questions.

Major research questions:

- i) What is the tariff equivalent (TE) of NTMs faced by sector-specific leading Indian imports from individual ASEAN countries?

(a) The TEs of NTMs differ among the ASEAN member countries and the sectors under consideration indicating varying motives behind imposition of NTMs by India; (b) In consistence with the general trend, NTMs account for a major portion of bilateral trade costs. (c) With the economic growth and rising incomes, ASEAN and India do use and deal with the challenges of SPS/TBT measures; (d) At the policy level and among business groups NTM related concerns are on rise; (e) India and ASEAN, following the trend elsewhere, have used NTMs to recover from economic downturn, and which have mutual effects on each other.

The variation in TE of NTMs among the ASEAN member countries and the sectors under consideration is explained by the following. First, the India-Singapore CEPA and India-Malaysia CEPA are of relative greater depth in terms of coverage of areas (as shown in Table 1.4 of introductory chapter). For instance, trade facilitation, SPS/TBT measures, services, investment, transport related provisions are covered unlike their exclusion in the ASEAN-India FTA.

Secondly, significant variations in TE of NTMs such as between Singapore and Thailand, are most likely to be due to transport costs which vary considerably, say for instance between Singapore and Philippines and Indonesia. The TE of NTMs inclusive of transport costs obtained in the study affect the comparison across trading partners and thus limiting the study.

Thirdly, though the FTAs with Singapore and Malaysia cover areas under NTMs at a greater depth than with that of ASEAN, such measures could mainly address the NTMs *at-the-border*. There are significant *behind-the-border/domestic* NTMs that India needs to deal with and a combination of the two can reduce the trade costs considerably.

5.3. Policy Recommendations

Prior to considering policy recommendations it is important to place current policy strategies in perspective as explained below.

5.3.1. How effective is the current approach to the process of economic integration?

Reduction of tariffs, addressing non-tariff measures, improving trade facilitation, upgrading infrastructure are all elements of trade liberalization, aiming to reduce trade costs. These elements complement each other. The institutional approach to the process of ASEAN-India economic integration has largely been compartmental so far. ASEAN-India FTA in goods was signed in 2009 while the much need complementary FTA in services and investment was signed in 2014. Progress or coverage of broad range NTMs including areas under trade facilitation can be gauged from the below.

The FTA under Article 8 on Non-Tariff Measures states:

“1. Each Party shall:

(a) not institute or maintain any non-tariff measure on the importation of goods from the other Parties or on the exportation or sale for export of goods destined for the territory of the other Parties, except in accordance with its WTO rights and obligations or other provisions in this Agreement; and (b) ensure the transparency of its non-tariff measures allowed under subparagraph (a) and their full compliance with its obligations under the WTO Agreement with a view to minimizing possible distortions to trade to the maximum extent possible.....

3. Each Party shall designate its contact point for the purpose of responding to queries related to this Article.”

The above position of the FTA concerning NTMs is partial and is indefinite, mainly because NTMs inherently are complex and non-transparent by nature.

(Wong & Pellan, 2012) found that the coverage of trade facilitation in the ASEAN-India Agreement on Trade in Goods (AITIGA)/ the FTA is “fairly general”. The provisions are said to be “broadly formulated and aspirational and do not commit parties to undertake concrete action or to achieve specific targets or goals”.

Such a piece meal approach to trade barriers will not only slow down the process of integration but also could defeat the existing initiatives such as the FTAs, as discussed above. Thus, a systemic approach where the FTAs in goods, services, investment are complemented along with definite strategies to tackle NTMs and that are in coherence

with the structural diversities of the member countries, would act as a big push to the trade costs.

5.3.2. Specific Policy Recommendations

As explained in section 5.2 signing of the FTAs in goods, services and investment are major institutional initiatives. Based on the results it can be said that India has not gained from falling tariffs. In line with the scope of the thesis, this finding is directly linked to structural incompatibilities of Indian economy. Trade liberalization or FTAs are sensitive to domestic conditioning lest adverse welfare effects become inevitable.

Recommendations, especially of policy nature, can only be of two kinds. One, recommendations of a broader macroeconomic nature that promotes macroeconomic policy for greater trade and trade led growth. Second, recommendations of a more narrow nature relating to a particular sector or commodities within specific trade agreements. The recommendations made here are a combination of both since the scope of this thesis while covering larger macroeconomic trade orientations was also forced to look at specific trade agreements and commodities to provide the empirical basis and evidence for the correctness of the thesis/research questions.

Now that the FTAs are in place, ASEAN and India's policies must focus on addressing the NTMs. The definition of NTMs corresponds with that of UNCTAD, namely, "policy measures, other than ordinary customs tariffs, that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both."

Trade costs in the form of NTMs appear nebulous, thus, tackling them is a tedious task. The immediate task should be in the direction of increasing their transparency and visibility. Based on the findings and in view of the inadequate institutional strategies, the thesis recommends the following:

- 5.3.2.1. Devise policies that simplify the procedural and cost related ASEAN-India FTA (in goods, services and investment) compliance issues. However, this is preconditioned on information on firm-specific perceptions on utilization of FTAs which could be gathered through research;
- 5.3.2.2. Facilitate collection, classification and analysis of NTMs bilaterally;
- 5.3.2.3. Identification and categorization of NTMs into (i) those reducible; (ii) those manageable; (iii) those removable;

- 5.3.2.4. Expand NTM specific area coverage under ASEAN-India FTA framework or sign mutual recognition agreements (MRAs) bilaterally and regionally towards harmonization of NTMs;
- 5.3.2.5. In recognition of the initiatives taken by ASEAN countries towards harmonization of NTMs within the bloc, India should negotiate strategies to join or align with ASEAN. This step would be cost effective;
- 5.3.2.6. An ASEAN-India online portal on NTMs should be established. The portal will facilitate reporting, monitoring and elimination/management of NTMs. Such a portal should have nodal points in each of the member countries and they would work in coordination with each other.

In the short-run the portal would act as a database for ASEAN-India specific NTMs to be consistently built over time. In the long-run the portal would be a source to devise definite and feasible NTM-specific policies, bilaterally and regionally.

An example of such an initiative is Common Market for Eastern and Southern Africa (COMESA)-East African Community (EAC)- Southern African Development Community (SADC) Mechanism for Reporting, Monitoring & Eliminating Non-Tariff Barriers.

- 5.3.2.7. The challenges or constraints to above recommendations can be in the form of financial resources as the NTMs are research and resource intensive and would require technical expertise. As a precondition mobilization of funds from private and public channels is critical.

5.4. Limitations of the Study

Chapter specific limitations are as mentioned below.

- 5.4.2. Chapter 2: Uses year 2009 as the base period to build a pre-AIFTA counterfactual of trade growth. The year 2009, a year of recession from 2007 financial recession especially in Europe, leading to greater trade between ASEAN and India, is likely to influence by causing downward/upward bias in the results.
- 5.4.3. Chapter 3: First, the study assesses IIT in manufactures for six diverse country pairs, juxtaposing the findings in a single frame. Hence, it is beyond the scope of this paper to examine country-specific finer details. Second, the GLI is sensitive to level of product disaggregation. Thus, assessment of India's IIT

with individual ASEAN member countries at beyond 3 digit/higher levels of product disaggregation is likely to reveal more refined aspects of IIT. Nonetheless, there exists certain degree of consensus on SITC Rev. 3, 3-digit as satisfactory level of disaggregation (Greenaway & Milner, 1987).

- 5.4.4. Chapter 4: Due to inadequate and non-comparable domestic price and import data, relative prices are used to estimate the TE of NTMs. Thus, the TE of NTMs indicates the extent to which importing products from ASEAN countries is expensive or cheaper in relation to imports from the rest of the world. This gives insights on trading with ASEAN as compared to trading with the world.

Transport costs vary substantially among the trading partners. Therefore, the TE of NTMs inclusive of transport costs obtained in the study affects the comparison across trading partners and thus limiting the study.

5.5. Directions for Further Research

The directions for further research are enumerated below:

- 5.5.2. Utilization rate of FTAs is determined by various factors, specified earlier, that vary between industries and depend on size of the firms. There is not enough information on how ASEAN-India FTA is being perceived by the firms on both sides. Conducting surveys on this would allow incorporation of diverse country-specific and industry-specific firm characteristics;

Also, such information would be used to devise coping mechanism for adversely affected sectors.

- 5.5.3. IIT determinants are country-specific and industry-specific. The former includes GDP, per capita GDP, geographic proximity, economic integration and so on. The latter consists of degrees of product differentiation - horizontal or vertical, economies of scale, type of competition model, that is, whether monopolistic or oligopolistic, role of MNCs among others. Studies in these directions might reveal distinct results.
- 5.5.4. To ensure transparency and visibility of NTMs, collecting information on them and categories they fall under is essential. This could be conducted through well designed surveys at different levels.

In this thesis I set out to examine how well tailored is the ASEAN-India Free Trade Agenda. Based on the findings, I would like to sum up the study by stating that (i) ASEAN-India economic integration process is not tailored in coherence with the country-specific characteristics of India and ASEAN economies; (ii) the policies are partial and indefinite on addressing NTMs; (iii) the process of economic integration should be approached in a systemic manner and not in a compartmentalized approach.



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APPENDIX A – CHAPTER 2

Table 2. 7 Indian Geometric Mean Annual Growth Rates of Trade quantities and Unit Values with ASEAN countries, 2005-09 (in %)

HS Code	Import Quantities	Unit Value of Imports	Export Quantities	Unit Value of Imports
2701	21	9.89	365.25	3.58
2702	N/A	N/A	142.64	-47.76
2703	N/A	N/A	N/A	N/A
2704	58.29	27.99	-10.73	400.89
2705	N/A	N/A	15.30	8.77
2706	-6.11	16.52	27.22	17.70
2707	-20.23	-11.01	84.08	28.10
2708	N/A	N/A	248.79	74.77
2709	-6.79	-5.16	14.02	-11.58
2710	24.12	-6.69	1.24	6.37
2711	-3.53	-0.87	-87.42	-6.02
2712	-7.43	-1.43	20.46	5.63
2713	10.04	-0.95	12.07	18.64
2714	359.27	6.48	N/A	N/A
2715	13.51	20.92	3.11	14.42
2716	N/A	N/A	N/A	N/A

Table 2. 8 Indian Geometric Mean Annual Growth Rates of Trade quantities and Unit Values of Plantation Commodities with ASEAN countries, 2005-09 (in %)

HS Code		Import Quantities	Unit Value of Imports	Export Quantities	Unit Value of Imports
Coffee (090111)	Asean	-8.55	14.27	26.96	0.31
	Non-Asean	N/A	N/A	-37.53	6.20
Other Black Tea (090240)	Asean	18.05	6.49	4.26	6.85
	Non-Asean	32.38	-40.17	-1.40	1.85
Pepper (090411)	Asean	-0.02	15.90	38.72	10.72
	Non-Asean	-3.36	102.97	0.51	10.07
Crude Palm Oil (151110)	Asean	24.06	8.75	N/A	N/A
	Non-Asean	N/A	N/A	N/A	N/A
Palm Oil, Other (151190)	Asean	4.63	8.37	-10.87	-6.31
	Non-Asean	N/A	N/A	N/A	N/A

APPENDIX B – CHAPTER 3

Table 3. 6 India-Indonesia Intra-Industry Trade Index for Top 25 Products

Product Code	Product Description (IDN)	IIT (in %)
514	Nitrogen-function compounds	1
533	Pigments, paints, varnishes and related materials	0.99
629	Articles of rubber	0.99
772	Electrical apparatus for electrical circuits and others	0.99
845	Articles of apparel of textile fabrics	0.98
522	Inorganic chemical elements, oxides and halogen salts	0.97
731	Machine tools working by removing metal and other	0.95
512	Alcohols, phenols and other derivatives	0.94
573	Polymers of vinyl chloride and others	0.92
551	Essential oils, perfumes and flavor materials	0.91
737	Metal working machinery	0.91
778	Electrical machinery and apparatus	0.91
831	Trunks and cases	0.91
679	Tubes, pipes and hollow profiles of iron and steel	0.9
881	Photographic apparatus and equipment	0.9
656	Tulles, lace, embroidery, ribbons and others	0.88
716	Rotating electric plant and parts	0.88
773	Equipment for distributing electricity	0.88
735	Parts and accessories for machines and tool holders	0.84
697	Base metal household equipment	0.83
775	Domestic equipment	0.82
663	Mineral manufactures	0.8
691	Iron, steel or aluminium structures	0.8
683	Nickel	0.79
553	Perfumery, cosmetic or toilet preparations	0.78

Table 3. 7 India-Malaysia Intra-Industry Trade Index for Top 25 Products

Product Code	Product Description (MYS)	IIT (in %)
716	Rotating electric plant and parts	1
731	Machin tools working removing materials	0.99
651	Textile yarn	0.97
743	Pumps, compressors and fans, centrifuges and others	0.91
666	Pottery	0.9
746	Ball or roller bearings	0.9
892	Printed matter	0.9
642	Cut paper and paper board articles	0.88
672	Ingots, semi-finished products of iron and steel	0.87
812	Sanitary, plumbing and heating fixtures and fittings	0.87
884	Optical goods	0.87

843	Men's and boys' wear of fabrics knitted or crocheted	0.86
583	Monofilament, rods, sticks and profile shapes of plastics	0.85
742	Pumps for liquids, liquid elevators and parts	0.85
581	Plastic tubes, pipes, hoses and fittings	0.84
785	Motorcycles and cycles, invalid carriages	0.84
629	Articles of rubber	0.83
721	Agricultural machinery and parts	0.83
728	Special machinery and equipment for particular industry	0.82
663	Mineral manufactures	0.8
522	Inorganic chemical elements, oxides and halogen salts	0.79
597	Mineral oil additives, fluids and lubricating preparations	0.78
682	Copper	0.78
772	Electrical apparatus for electrical circuits and others	0.78
665	Glassware	0.77

Table 3. 8India-Philippines Intra-Industry Trade Index for Top 25 Products

Product Code	Product Description (PHL)	IIT (in %)
597	Mineral oil additives and fluids	0.99
874	Measuring and controlling instruments and apparatus	0.99
778	Electrical machinery and equipment	0.93
581	Plastic tubes, pipes and hoses	0.87
848	Non-textile clothing articles and headgear of all materials	0.85
786	Trailers, transport containers	0.84
771	Electric power machinery	0.79
885	Watches and clocks	0.78
725	Paper industry machinery	0.76
634	Veneers, plywood and others	0.74
772	Electrical apparatus for electrical circuits and others	0.74
737	Metalworking machinery	0.71
873	Meters and counters	0.71
554	Soaps, cleansing and polishing preparations	0.67
514	Nitrogen function compounds	0.66
774	Medical electrodiagnostic apparatus	0.66
716	Rotating electric plant and parts	0.65
592	Starches and glues	0.61
533	Pigments, paints and varnishes	0.6
744	Mechanical handling equipment	0.6
749	Non-electric parts and accessories of machinery	0.59
746	Ball or roller bearings	0.56
784	Motor vehicles' parts and accessories	0.56
882	Photographic and cinematographic supplies	0.56
642	Cut paper and paper board articles	0.54

Table 3. 9India-Singapore Intra-Industry Trade Index for Top 25 Products

Product Code	Product Description (SGP)	IIT (in %)
671	Pig iron and others, ferro-alloys	0.99
684	Aluminium	0.99
727	Food processing machines	0.99
763	Sound and television image recorders	0.99
791	Railway vehicles and equipment	0.99
583	Monofilament, rods, sticks and others of plastic	0.98
682	Copper	0.98
775	Domestic equipment	0.98
691	Iron, steel and aluminium structures	0.97
745	Non-electrical machinery and mechanical apparatus	0.97
666	Pottery	0.96
673	Flat rolled products of iron and steel	0.96
812	Sanitary, plumbing and heating fixtures and fittings	0.95
692	Metal containers for storage and transport	0.93
714	Engines and motors, non-electric	0.93
761	Television receivers	0.9
741	Industrial heating and cooling equipment	0.88
699	Base metal manufactures	0.87
522	Inorganic chemical elements, oxides and halogen salts	0.86
621	Materials of rubber	0.85
679	Iron and steel tubes, pipes and tube or pipe fittings	0.84
554	Soaps, cleansing and polishing preparations	0.83
735	Metal machinery tools and parts	0.83
676	Iron and steel bars, rods, angles, shapes and sections	0.81
716	Rotating electric plant and parts	0.8

Table 3. 10 India-Thailand Intra-Industry Trade Index for Top 25 Products

Product Code	Product Description (THA)	IIT (in %)
871	Optical instruments and apparatus	0.99
665	Glassware	0.96
723	Civil engineering plant and equipment	0.96
716	Rotating electric plant and parts	0.95
841	Men's and boys' wear of fabrics not knitted or crocheted	0.95
666	Pottery	0.94
748	Transmission equipment	0.94
655	Knitted or crocheted fabrics	0.93
514	Nitrogen function compounds	0.92
598	Miscellaneous chemical products	0.91
523	Metal salts and peroxy salts of inorganic acids	0.88
685	Lead	0.88
511	Hydrocarbons and other derivatives	0.87
679	Iron and steel tubes, pipes and tube or pipe fittings	0.87
718	Power generating machinery	0.87

726	Printing industry machinery	0.87
581	Plastic tubes, pipes and hoses	0.86
641	Paper and paperboard	0.86
784	Motor vehicles' parts and accessories	0.86
678	Iron steel wire	0.85
899	Miscellaneous manufactured articles	0.85
611	Leather	0.84
745	Non-electrical machinery, tools and equipment	0.84
516	Other organic compounds	0.83
728	Special machinery and equipment for particular industry	0.83

Table 3. 11 India-Vietnam Intra-Industry Trade Index for Top 25 Products

Product Code	Product Description (VNM)	IIT (in %)
655	Knitted or crocheted fabrics	1
724	Textile and leather machinery and parts	0.97
749	Non-electric parts and accessories of machinery	0.97
792	Aircraft equipment and spacecraft and launch vehicles	0.97
874	Measuring and controlling instruments and apparatus	0.97
895	Office and stationery supplies	0.96
747	Taps, cocks, valves and similar appliances	0.95
657	Special yarns and textile fabrics and related products	0.92
679	Iron and steel tubes, pipes and tube or pipe fittings	0.92
898	Musical instruments and records, tapes	0.91
582	Sheets, plates, film, foil and strip of plastics	0.88
525	Radioactive and associated materials	0.85
872	Instruments and appliances for medical and other purposes	0.84
663	Mineral manufactures	0.82
748	Transmission equipment	0.82
726	Printing industry machinery	0.81
728	Special machinery and equipment for particular industry	0.81
735	Metal machine tool parts	0.81
776	Valves and tubes, transistors and similar semiconductor devices	0.81
598	Miscellaneous chemical products	0.8
695	Hand and machine tools	0.78
773	Equipment for distributing electricity	0.77
662	Clay and refractory construction material	0.76
885	Watches and clocks	0.76
881	Photographic apparatus and equipment	0.74

APPENDIX C – CHAPTER 4

Image 4. 1 Outliers in the Estimates of Tariff Equivalent of NTMs on Indian Imports of Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders from Malaysia (2010-2014)



Note: These are representative images taken from internet

Image 4. 2 Outliers in the Estimates of Tariff Equivalent of NTMs on Indian Imports of Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders from Philippines (2010-2014)





HS Code 853949 - Other Ultraviolet Or Infrared Lamps

Note: These are representative images taken from internet

Image 4. 3 Outliers in the Estimates of Tariff Equivalent of NTMs on Indian Imports of Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders from Singapore (2010-2014)



HS Code 850511 - Digital_Carrier_System_Apparatus



HS Code 850511 – Permanent Magnets and Magnetised Articles, of Metal

Note: These are representative images taken from internet

Image 4. 4 Outliers in the Estimates of Tariff Equivalent of NTMs on Indian Imports of Nuclear Reactors, Boilers, Machinery and Mechanical Appliances and Computers from Thailand (2010-2014)

<p>HS Code 848210 – Ball Bearings</p>	<p>HS Code 847160 - Input or output units, whether or not containing storage units in the same housing</p>



HS Code 847010 - Electronic Calculators, Operation Without an External Source of Power



HS Code 842123 – Oil or Petrol-filters for Internal Combustion Engines



HS Code 848350 - Flywheels and Pulleys, Including Pulley Blocks



Note: These are representative images taken from internet

Image 4. 5 Outliers in the Estimates of Tariff Equivalent of NTMs on Indian Imports of Electrical Machinery and Equipment and Parts, Telecommunications Equipment, Sound Recorders, Television Recorders from Vietnam (2010-2014)



Note: These are representative images taken from internet

VITA

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