



ASEAN FTA: Is It Creating Agricultural Trades?

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ABSTRACT

ASEAN member countries have an abundant resource including land and mineral deposits. As the region has embraced globalization and market openness, it is realizing its comparative advantage in the agricultural industry and reaping the benefit of trade liberalization. Despite a relatively declining contribution to the GDP of the countries, agriculture remains as an important sector to keep employment, sustain rural economies and accumulate foreign exchange. The stellar rates of agricultural growth in the transition economies including Cambodia, Laos, Myanmar and Vietnam is another stepping stone to higher economic development. To fulfill full potential of the CLMV economies, ASEAN would need to provide proper institutional arrangements that promote a rapid transfer of agricultural technology and market transactions. Panel data estimate using a gravity model comprising of three binary variables over the 1995-2010 periods which provides a persuasive conclusion that the formulation of ASEAN and its subsequent trade reforms have contributed to net creating trade of agricultural products. These findings shed light on how the successive enlargements accompanied by deepening integration to the wider world could make ASEAN achieve the goal of establishing a single market and production base.

INTRODUCTION

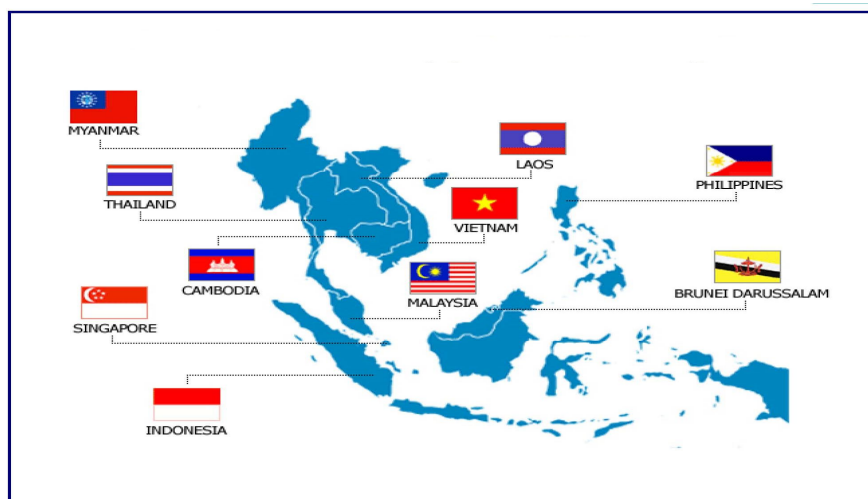
Established in August 1967, the Association of Southeast Asian Nations or ASEAN has evolved into an emerging economic community. Initiated by the five founding fathers, including Indonesia, Malaysia, Philippines, Singapore and Thailand, the association has added six more countries, namely, Brunei Darussalam in 1984, Vietnam in 1995, Lao PDR and Myanmar in 1997, and Cambodia in 1999 (Figure 1).

It was not until 1976 when ASEAN sets in a legally binding order, the Treaty of Amity and Cooperation in Southeast Asia (TAC). The TAC paves the way for ASEAN's fundamental principles as follows: "mutual respect for the independence, sovereignty, equality, territorial integrity, and national identity of all nations; the right of every State to lead its national existence free from external interference, subversion or coercion; non-interference in the internal affairs of one another; settlement of differences or disputes by peaceful manner;

renunciation of the threat or use of force; and effective cooperation among themselves. These principles of non-intervention, non-interference and non-confrontational conflict resolution are collective identities of the so-called “ASEAN Way” (Goh 2003; Jones 2010).

Along with the ASEAN Way, ASEAN has been working for greater regional integration. For example, the 9th ASEAN Summit in 2003 agreed to set up an ASEAN Community and the 12th ASEAN Summit of 2007 affirmed this commitment and decided to accelerate the establishment of ASEAN Community by the end of 2015. As a pillar of the ASEAN Community, ASEAN Economic Community (AEC) aims: (a) a single market and production base, (b) a highly competitive economic region, (c) a region of equitable economic development, and (d) a region fully integrated into the global economy. Accordingly, the AEC will transform ASEAN to a single market economy with the size of 602 million consumers and US\$2.6 trillion GDP (ASEAN Secretariat 2013a).

Figure 1. Map of ASEAN



Economic Dynamics and Openness

Table 1 shows ASEAN has grown at an average annual rate of 5.3% over the period of 1984~2012. This growth rate is about twice the levels of growth experienced by the OECD (2.7 %) and surpasses the level of growth by the world (3.5%). Among ASEAN, Cambodia recorded the highest growth rate of 7.7%, followed by Vietnam (6.7%), Singapore (6.5%), and Lao PDR (6.3%) in the same periods. However, Lao PDR, also known as Laos, has grown most rapidly with the average growth of 8.2% since 2010, followed by Singapore and Cambodia.

Table 1. GDP Growth Rates

Country	Year					Unit: %
	1984~89	1990~99	2000~09	2010~12	1984~2012	
Myanmar						
Thailand						
Cambodia						
Singapore						
Indonesia						
Laos						
Vietnam						
Malaysia						
Philippines						
Brunei Darussalam						

Brunei Darussalam	-0.26	2.08	1.41	2.32	1.37
Cambodia	n/a	7.25	8.34	6.76	7.74
Indonesia	6.23	4.83	5.11	6.31	5.37
Lao PDR	4.14	6.27	6.85	8.24	6.31
Malaysia	5.36	7.25	4.79	5.95	5.88
Myanmar	-0.82	6.12	12.92	15.16	5.76
Philippines	1.01	2.75	4.46	6.04	3.32
Singapore	6.92	7.31	5.18	7.09	6.47
Thailand	8.49	5.28	4.06	4.77	5.47
Vietnam	4.54	7.42	7.27	5.92	6.69
ASEAN	3.94	5.59	5.68	5.94	5.34
OECD	3.66	2.71	2.46	1.80	2.70
World	3.52	2.80	4.10	3.80	3.51

Note: 1. Data for Cambodia is available from year 1994.

2. For Myanmar, data after 2006 is based on estimates by the International Monetary Fund (IMF).

Source: World Bank (2013); IMF's World Economic Outlook Database
(<http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/weoselgr.aspx>)

Especially, the ASEAN transition economies, namely Cambodia, Laos, Myanmar and Vietnam (CLMV) are embracing market economics and delivering most dynamic economic performance in the region.¹ For example, Cambodia has achieved rapid economic progress since 1993. GDP growth in the 1990s and 2000s helped to more than triple per capita income to US\$760 in 2010 and contributed to a reduction in the poverty rate from 47% in 1994 to 21% in 2008 (World Bank 2011).

Laos has also made sound economic progress in the past decade. Stimulated mainly by growth in construction, manufacturing, mining and service sectors, GDP rose from US\$1,758 mill in 2002 to US\$8,227 mill in 2011 and the average rate of annual growth recorded above 8% in the 2010~12 periods (Phimmahasay *et al.* 2012). By joining the WTO in 2013, the country is expected to further trade and investment modernization. Although all ASEAN countries are classified as developing countries within the WTO system, only Cambodia, Laos and Myanmar are eligible for special and differential treatment as Least Developed Countries (LDCs).²

Myanmar's transition to a market-oriented economy is partly complete even with more than two decades of transition (Kubo 2012). But, the World Bank database suggests that Myanmar experienced a remarkable growth over the periods, 6.1% in the 1990s and 12.9% in

¹ Three major components of the transition process are: (1) macroeconomic stabilization, (2) price and market liberalization, and (3) restructuring and privatization of state enterprises (IMF 2000).

² LDCs are designated by the United Nations system as an effort to put LDCs' on sustained economic growth and development in the 1980s. The three criteria for the identification of LDCs are: (1) a low-income criterion (under US\$750 Gross National Income per capita), (2) a human resource weakness criterion, and (3) an economic vulnerability criterion based on a composite Economic Vulnerability Index (EVI) (UN 2008). As criteria calculations for Laos, see Zhou (2012).

the 2000s.³ A growth estimate for the 2010~12 period amounts to 15.2%. Myanmar's GDP per capita increased from US\$134 in 1998 to US\$835 in 2012, the lowest level among ASEAN and one of the lowest in Asian countries. Considering the rich natural resource environment, strategic location, a young and growing demographic and low leverage conditions, BMI acknowledged Myanmar's formidable long-term potential (BM 2012).

Since the economic reforms, *Doi Moi* initiated in 1986 with a goal of the socialist-oriented market economy, Vietnam has shown a huge success in economic development. Being one of the poorest countries in the world, with per capita GDP (PPP) below US\$300 in 1980, it reached US\$3,500 by the end of 2012.⁴ The poverty headcount ratio at \$1.25 a day (PPP) has fallen from 63.7% in 1993 to 16.9% in 2008. But, during 2010~13 the country is estimated to grow at a slower pace than Indonesia and Philippines for the first time in two decades.

The remaining ASEAN countries (ASEAN6) have had a free-market economy and relatively stable economic conditions. Since the middle of the 1980s, Indonesia, Malaysia and Thailand have recorded over 5% of the average growth rate while Brunei and Philippines have shown a slower pace of growth. The growth gap between CLMV and ASEAN6 is about 2% point in the same period.

The index of openness is adopted to measure the extent of economic integration for ASEAN. Table 2 shows the estimates of index, defined as the ratio of total trade to GDP. Although the extent of the index varies from country to country, it has increased over the period from 1993 to 2012. On average, the index of openness for ASEAN amount to 130%, which is far greater than those of OECD (87%) and the world (51%) in the same period. Singapore (371%) ranked top among ASEAN, followed by Malaysia (190%), Vietnam (126%), and Thailand (121%). While Thailand and Vietnam have improved their openness consistently, Myanmar remains unchanged.

Table 2. Index of Openness

Unit: %

Country	Year			
	1993~99	2000~09	2010~12	1993~2012
Brunei Darussalam	110.0	103.1	112.4	106.9
Cambodia	72.7	126.1	113.6	105.1
Indonesia	60.5	59.3	53.3	58.8
Lao PDR	67.3	74.8	77.9	72.4
Malaysia	189.2	196.6	166.9	189.5
Myanmar	2.2	0.7	n/a	1.6
Philippines	88.2	93.2	65.4	87.3
Singapore	330.0	397.3	381.2	371.3

³ See Kudo *et al.* (2013) for the issues of data deficiency about Myanmar.

⁴ See Index Mundi [http://www.indexmundi.com/vietnam/gdp_per_capita_\(ppp\).html](http://www.indexmundi.com/vietnam/gdp_per_capita_(ppp).html)

Thailand	91.2	134.0	145.9	120.8
Vietnam	86.5	139.1	174.5	126.0
ASEAN	109.8	139.3	147.3	129.5
OECD	74.7	90.7	101.8	86.5
World	44.7	54.4	59.5	51.3

Note: Myanmar's data is available up to 2004.

Source: World Bank (2013)

Cambodia began to reform its trade policies in the 1990s. The reform of the trade regime from a centrally planned system to a relatively open market included the unification of exchange rates, reform of tariff and non-tariff measures and implementation of “Liberal Law on Investment” (Martin 2000). Laos implemented the “New Economic Mechanism” in 1986 and began to abolish the state monopoly on trade, and lower tariff rates, quantitative restrictions and import licensing requirements.

In the case of Myanmar, decades of military regime led to economic sanctions by the international community. The country is now on the path of gradual opening-up and preparing to draft a five-year strategic plan in the first time to boost exports. In Vietnam, “open door” policy was introduced to attract FDI in 1987. Since then, a series of reform included elimination of the government’s monopoly on trade, introduction of customs tariff and various quotas removals.

Since the first major trade reform in 1985, Indonesia has made various trade liberalization measures. Especially, WTO and APEC commitments and implementation of the IMF program led the country to move towards a liberal trade regime to the extent of Singapore’s in the 1970s. Trade liberalization in Thailand began in the mid-1980s and adopted a comprehensive tariff reduction initiative in the early 1990s. After the Asian financial crisis, trade reform was resumed in 1999. FDI played a crucial role in restructuring the industry.

Agricultural Dynamics and Trade

Agriculture in developing countries plays a vital role in supporting their economies. Endowed with relatively abundant unskilled labor force, agriculture provides an initial comparative advantage in trade. It earns foreign exchange and adds domestic savings. By ensuring the supply of essential food, agriculture helps feed often very large populations and ensure employment. In addition, agriculture creates a market for manufactured goods and services.

Table 3 displays the agricultural share of GDP in a percentage term. The agricultural sector in ASEAN has contributed to the GDP with a relatively high proportion. Peaked at 25% in the 1990s, the agricultural share has steadily dropped to 14% in the 2010~12 period. The speed of agricultural reductions is compatible with the world average. Since 1984, ASEAN’s agricultural share has fallen by 38% while the world’s share records a 36 reduction. Interestingly, contribution to GDP from the agricultural sector in OECD countries have decreased at a steeper pace. The decline in the agricultural share can be generally attributed to the continued migration of rural workers to the urban industries with higher skills

requirement. Seeking better wages or improved living environments, released workers from the agricultural sector contribute to employment in non-farm industries.

Table 3. Share of Agricultural Value-added in GDP

Unit: %

Country	1984~89	1990~99	2000~09	2010~12
Brunei Darussalam	1.55	1.14	0.95	0.71
Cambodia	n/a	46.63	33.81	36.35
Indonesia	22.94	17.91	14.55	14.28
Lao PDR	60.55	56.52	38.93	31.77
Malaysia	19.64	13.15	9.02	10.79
Myanmar	52.70	60.05	53.56	-
Philippines	23.82	19.94	13.02	12.57
Singapore	0.70	0.19	0.06	0.04
Thailand	16.01	10.38	10.30	12.33
Vietnam	41.43	30.24	22.00	21.30
ASEAN	22.75	24.97	17.83	14.09
OECD	6.75	4.93	3.08	2.87
World	20.19	18.66	14.44	13.01

Source: World Bank (2013)

Table 4 summarizes the change of agricultural shares in total employment. Over the 1984~2011 periods, agricultural share in ASEAN's employment has gradually been reduced from 43% to 33%. This implies that agriculture employs 33% of ASEAN's labor force and accounts for 14% of GDP during most recent years. The fact that agricultural employment is 2.3 times higher than GDP indicates the possibility of diverting further agricultural labor force to other industries with a higher rate of productivity. For OECD countries, the gap between agricultural employment and its GDP contribution is smaller, amounting to 1.9 times.

Table 4. Share of Agriculture in Total Employment

Unit: %

Country	1984~89	1990~99	2000~09	2010~11
Brunei Darussalam	n/a	2.00	1.40	n/a
Cambodia	n/a	77.50	68.42	55.00
Indonesia	55.38	47.88	43.03	37.10

Lao PDR	n/a	85.40	n/a	n/a
Malaysia	30.27	20.90	14.88	13.30
Myanmar	65.63	67.08	n/a	n/a
Philippines	48.08	43.00	36.13	33.10
Singapore	0.67	0.48	1.02	1.10
Thailand	65.70	54.99	43.60	38.45
Vietnam	n/a	66.28	57.36	50.05
ASEAN	43.33	40.71	34.91	32.59
OECD	11.66	9.38	6.49	5.33
World	19.80	19.10	17.83	14.68

Source: World Bank (2013)

Among the ASEAN members, Cambodia and Vietnam maintain very high proportions of agricultural employment with 55% and 50% in the 2010~11 periods, respectively. However, despite the lack of data, the agricultural sectors in Laos and Myanmar are likely to amount to greater shares in total employment. Such high ratios of agricultural employment in CLMV elucidate the vital importance of the industry to their economies and shed light on why agriculture should have priority over other industries in the process of their economic development. Placing economic or policy emphasis on the agricultural sector is not limited to only CLMV which have recently accepted a market economic system. Given the large agricultural contribution to the national employment, a boost to the agricultural economy is also needed to achieve extensive economic growth even in other ASEAN countries.

All in all, agriculture is an important industry in the ASEAN. A gradual decline in its importance in terms of contribution to GDP and employment does not prove lagging or that of a wretched state agriculture. Agriculture is still the backbone of the ASEAN economy supporting a large population and sustaining rural viability. In this regard, agricultural integration of ASEAN into the world economy is fast becoming a necessity. In order to reap dividends from the wide opened economy and avoid falling behind, ASEAN has no choice but to explore their comparative advantage to agriculture in the fullest extent.

Table 5 summarizes ASEAN's performance in agricultural trade. ASEAN has significantly increased its agricultural export since 1984. A 650% growth of agricultural export over the 1984~2012 periods is larger than the world's average level. This may suggest that agriculture plays an important part in the ASEAN economies and the Green Revolution has allowed these countries to raise agricultural productivity. It is evident that agricultural commodity price spikes since the late 2000s have accelerated export growth. But, this does not diminish ASEAN's export achievement because the proportion of ASEAN in world export has been gradually increasing from 6% to over 10%.

Table 5. Agricultural Exports

Country	Unit: Million US\$				
	1984~89 (1)	1990~99	2000~09	2010~12 (2)	% Change (2)/(1)
Brunei	9	5	4	9	5.22

Cambodia	n/a	n/a	70	347	-
Indonesia	3,678	6,702	15,882	43,041	1,070.18
Lao PDR	n/a	n/a	n/a	n/a	n/a
Malaysia	6,617	9,353	14,714	33,906	412.43
Myanmar	n/a	376	2,477	2,845	-
Philippines	1,692	2,030	2,684	4,874	188.00
Singapore	3,447	4,852	4,739	9,274	169.09
Thailand	5,526	11,207	19,290	41,589	652.65
Vietnam	n/a	3,202	8,029	21,370	-
ASEAN Average	3,495	5,675	8,450	17,473	399.97
ASEAN Total	20,968	37,727	67,890	157,255	649.96
World Total	326,852	511,728	861,703	1,559,562	377.15
ASEAN/World	6.42%	7.37%	7.88%	10.08%	-

Note: 1. No data for Lao PDR.

2. Myanmar includes data only during the 1991~92 and 2008~12 periods.

3. Vietnam's data for the 1990-99 periods refers to that of the 1997-99 periods.

Source: WTO Statistics Database <<http://stat.wto.org/StatisticalProgram/>>

Indonesia, Thailand and Malaysia are the leading exporters, which account for three quarters of the regional total in 2010~12. By exporting US\$43 billion in average during the same periods, Indonesia sits at the top of ASEAN. Its export progress is manifested in the 1,070% growth rate over the entire sample period. Thailand was taken up its first place by Indonesia in the region but the average amount of US\$42 billion is equivalent to a 652% increase since 1984.

The lack of data prevents comparable figures for the same period for the CLMV economies. Nevertheless, one can observe substantial progress in their agricultural exports during recent years. For example, Cambodia has increased its agricultural exports from US\$53 million in 2000 to US\$408 million in 2012, which is equivalent to 665% growth in total. Myanmar's exports have also reached US\$3 billion in 2012, which is eight times higher than the level in 1991. The Vietnamese case is illustrative in a sense that except for the figures of 2009, its agricultural exports have continually grown and thus recorded the highest annual growth rate of 15% since 1997. In addition, Vietnam is the only country in the transition economy which has reached the magnitude of the average agricultural exports in ASEAN.

From Table 6 one can see that agricultural imports by ASEAN has also expanded to a large extent. The total amount of agricultural imports have increased from US\$9.9 billion in 1984~89 to US\$87.8 billion in 2010~12, a 787% increase in an absolute term. This growth rate surpasses the world average level of 357% by a wide margin, which gives another indication of steady progress towards agricultural integration.

Table 6. Agricultural Imports

Country	Unit: Million US\$				
	1984~89 (1)	1990~99	2000~09	2010~12 (2)	% Change (2)/(1)

Brunei	139	229	260	481	245.52
Cambodia	n/a	n/a	250	496	-
Indonesia	1,521	4,454	7,786	19,654	1,192.09
Lao PDR	n/a	n/a	n/a	n/a	n/a
Malaysia	1,821	3,882	7,863	19,544	973.21
Myanmar	n/a	91	-	652	-
Philippines	918	2,544	4,134	7,030	665.69
Singapore	3,774	5,734	6,620	12,860	240.71
Thailand	1,491	4,391	7,036	14,675	883.96
Vietnam	n/a	654	3,956	12,385	-
ASEAN Average	1,414	3,165	4,974	9,753	589.93
ASEAN Total	9,895	21,979	37,905	87,776	787.05
World Total	353,489	545,593	906,604	1,613,837	356.55
ASEAN/World	2.80%	4.03%	4.18%	5.44%	-

Note: 1. No data for Lao PDR.

2. Myanmar includes data only during the 1991~92 and 2010~12 periods.

Source: WTO Statistics Database <<http://stat.wto.org/StatisticalProgram/>>

Similar to the case of agricultural exports, Indonesia, Malaysia and Thailand are major agricultural importers in the region. Not only in absolute terms but in growth rates, the three countries have led the economic blocs' development. As for the CLMV economies, except Vietnam, the extent of agricultural imports falls well short of the regional average.

One can draw a couple of implications from the historical development of agricultural trade in the ASEAN. One is that agricultural integration into the world economy is still in progress. Having a big advantage in the agricultural industry, ASEAN can realize its full potential. Gaining experience of marketing opening and learning-by-doing in the CLMV economies will make them catch up with their neighbors and lay a stepping stone to a faster rate of economic development. For example, ASEAN as a whole has recorded a surplus of agricultural trade close to US\$70 billion annually over the 2010~12 periods. As trade expands, greater amounts of foreign exchange can be earned and invested.

The other is related to the spillover effects of globalization. Globalization has facilitated the rapid spread of agricultural technology, increasing productivity. It has also promoted regional cooperation such that ASEAN can secure a more competitive trading position in the world institutions as well as global markets.

Regional Economic Integration and Achievements⁵

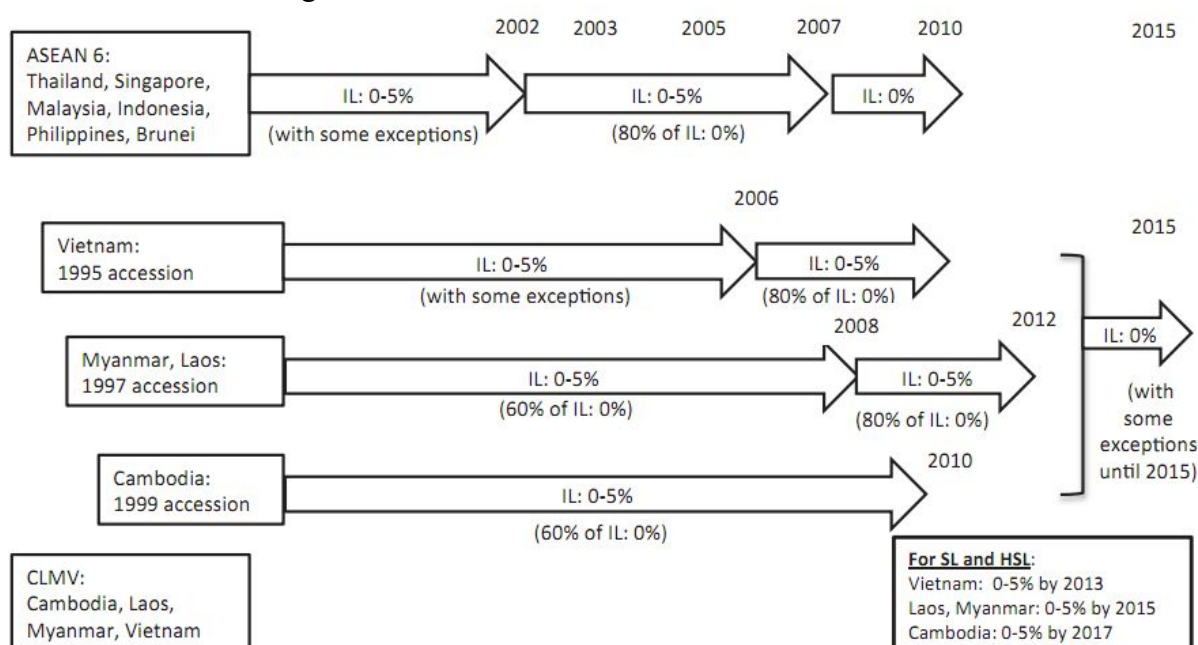
ASEAN has made the multi-layered efforts in its economic integration into the world economy. The first approach is the deepening of its own FTA arrangements via the ASEAN Free Trade Area (AFTA), the ASEAN Trade in Goods Agreement (ATIGA), and AEC. The

⁵ Focusing on agricultural trade, this section mainly deals with the arrangements of trade in goods. Yet it was not until December 1998 that the term "regional integration" appeared in the ASEAN official documents (Ariff 2001).

second track to global integration is through the so-called “ASEAN+” types of regional trading arrangement. Finally, each ASEAN member country involves with bilateral and regional trading arrangements.

Signed in 1992, the ASEAN Free Trade Area (AFTA) agreement aims to increase the region’s competitive advantage through eliminating trade barriers and attract more FDI. The Common Effective Preferential Tariff (CEPT) scheme under the AFTA sets out to phase out all tariffs between 1993 and 2010 <Figure 2>. AFTA-CEPT grouped products in the five categories: 1) Inclusion List (IL) products are subject to tariff reduction; 2) Temporary Exclusion List (TEL) products are subject to tariff reduction in later phases; 3) Sensitive List (SL) products are unprocessed agricultural products or products that will be phased-in to IL; 4) Highly Sensitive List (HSL), and 5) General Exclusion List products are related to national security, public morals and public health.

Figure 2. Tariff Schedule under the AFTA-CEPT



Note: IL = Inclusion List; SL = Sensitive List; and HSL = Highly Sensitive List
 Source: Ngov (2011)

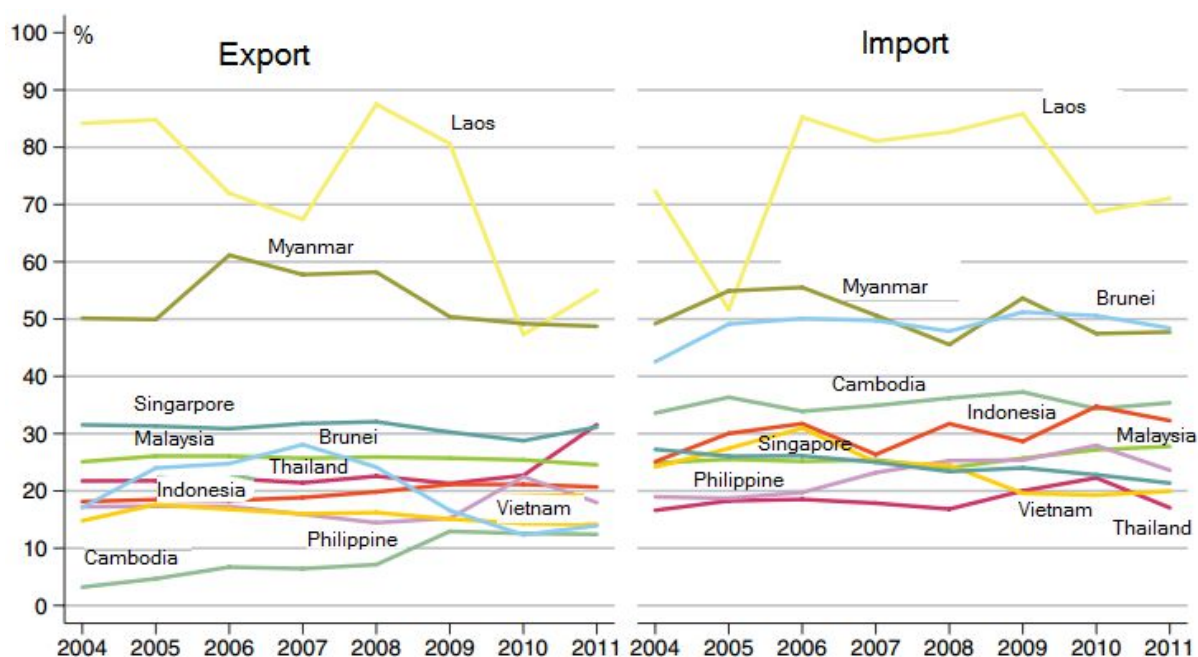
The TEL, SE and HSL products are gradually shifted to IL and then are bound to tariff cuts. Accordingly, except for rice for the Philippines and Indonesia and sugar for Indonesia, all agricultural products are now registered as IL.⁶ From 2003 to 2010, the total number of IL tariff lines with a zero tariff rate increased from 32% to 98% of the total tariff lines (Chirathivat and Srisangnam 2013).

⁶ The Protocol on the Special Arrangement for Sensitive and Highly Sensitive Product of 1999 specified the commitments to liberalize trade in unprocessed agricultural products <<http://www.asean.org/communities/asean-economic-community/item/protocol-on-the-special-arrangement-for-sensitive-and-highly-sensitive-products-singapore-30-september-1999>>.

Replacing the CEPT, the ATIGA in 2010 further geared towards liberalizing trade and investment. While the AFTA-CEPT focused on tariff elimination, the ATIGA was extended to cancellation of non-tariff measures (NTM), procedures and documentary requirements and trade facilitation. To realize the goal of a single market and production base, ASEAN needs to move toward the AEC by 2015 and reduce a substantial number of NTM (ASEAN Secretariat 2009).

Implementation of the AFTA-CEPT and the ATIGA dropped the simple average of tariff rates for intra-ASEAN trade from 4.1% in 2001 to 1.9% in 2008, contrasting with a modest decrease of the MFN rates from 9.4% to 8.3% (ASEAN Secretariat 2013a). As a consequence, the value of intra-ASEAN trade in goods (a sum of export and import) has increased from around US\$261 billion in 2004 to US\$598 billion in 2011 (ASEAN Secretariat 2013b). Figure 3 shows the intra-ASEAN share of total trade in goods has also increased from 24% to 25% over the same period.

Figure 3. Intra-ASEAN Shares of Trade in Goods

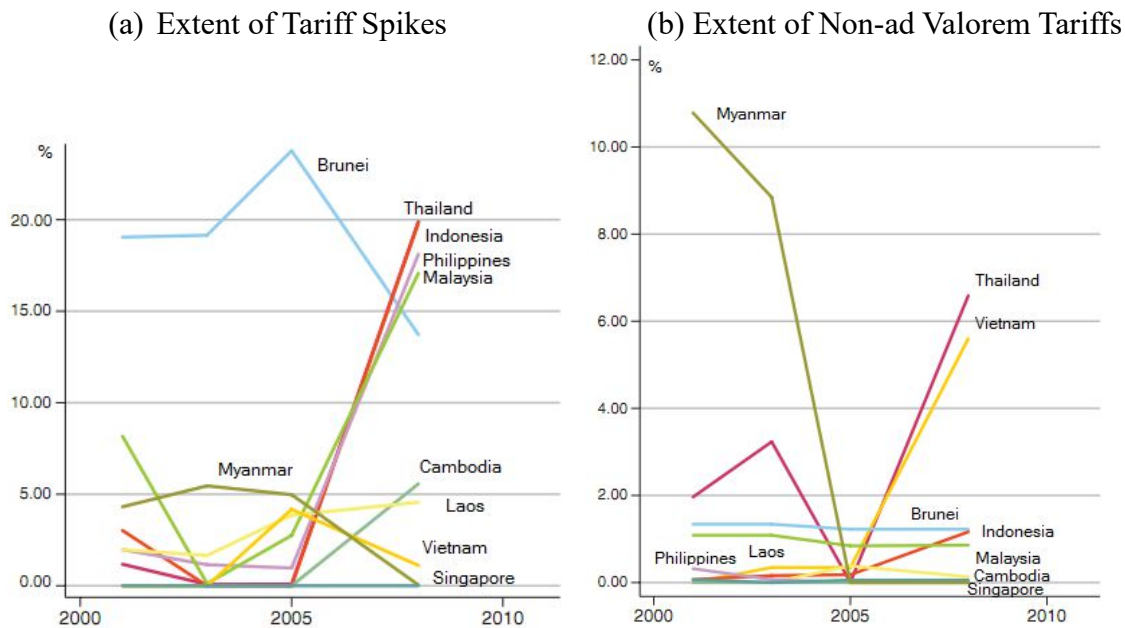


Source: ASEAN Secretariat (2013a)

Nonetheless, there remains a couple of challenges still to be settled. Figure 4 shows the extent of tariff spikes and non-ad *valorem* tariffs in ASEAN member states.⁷ The increase in tariff spikes along with a declining average tariff rate implies some tariff lines are not correspondingly reduced and trade distorting. The increased use of non-ad *valorem* tariffs in several ASEAN member states is also threatening a transparent and predictable trading system.

⁷ A tariff spike refers to an ad valorem tariff whose rate is more than three times the national mean. A non-ad *valorem* tariff refers to a tariff line with a specific or non-proportional rate other than a single rate.

Figure 4. Extent of Tariff Spikes and Non-ad Valorem Tariffs



Source: ASEAN Secretariat (2013a)

ASEAN has also played as an integration hub in developing FTAs in East Asia. To develop FTA networks with ASEAN's Dialogue Partners as an integral part in the AEC, ASEAN is strengthening its integration with the global economy. Since 2010, ASEAN has ratified five ASEAN+1 FTAs each with Australia and New Zealand (AANZFTA), China (ACFTA), India (AIFTA), Japan (AJCEP), and Korea (AKFTA).

As Table 7 demonstrates, the coverage ratio of tariff elimination at the HS 6-digit level exceeds 90% in average. The lowest coverage rate of 79.6% occurs in the AIFTA. Concessions to tariff elimination by the FTA partners are more than 90% of the products with the exception of India. Among the individual ASEAN member states Brunei, Cambodia, Malaysia, Philippines, Singapore and Thailand have allowed more than 90% of their product coverage while Indonesia, Laos, Myanmar and Vietnam have committed to lower than 90% tariff elimination on average.

In addition, ASEAN+3 (China, Japan and Korea) and ASEAN+6 (Australia, China, India, Japan, Korea and New Zealand) are under negotiations. Moreover, ASEAN member states and its six FTA partners launched negotiations to establish the Regional Comprehensive Economic Partnership (RCEP) in 2012, aimed at concluding it by 2015. The RCEP is targeted to achieve a fully liberalized region by deepening convergences and strengthening comprehensive liberalization packages. Making significant improvements over the exiting ASEAN+1 FTAs, the RCEP would reduce the "noodle-bowl" phenomenon and maximize the value of creating a strong production base in the region.⁸

⁸ See Kawai and Wignaraja (2009) for detailed discussion on the Asian noodle bowl effects.

Table 7. Tariff Elimination Coverage in ASEAN+1 FTAs

Unit: %

	AANZFTA	ACFTA	AIFTA	AJCEP	AKFTA	Average
Partner	100.0	94.1	78.8	91.9	90.5	-
Brunei	99.2	98.3	85.3	97.7	99.2	95.9
Cambodia	89.1	89.9	88.4	85.7	97.1	90.0
Indonesia	93.7	92.3	48.7	91.2	91.2	83.4
Lao PDR	91.9	97.6	80.1	86.9	90.0	89.3
Malaysia	97.4	93.4	79.8	94.1	95.5	92.0
Myanmar	88.1	94.5	76.6	85.2	92.2	87.3
Philippines	95.1	93.0	80.9	97.4	99.0	93.1
Singapore	100.0	100.0	100.0	100.0	100.0	100.0
Thailand	98.9	93.5	78.1	96.8	95.6	92.6
Vietnam	94.8	n/a	79.5	94.4	89.4	89.5
Average	95.7	94.7	79.6	92.8	94.5	-

Source: Fukunaga and Isono (2013)

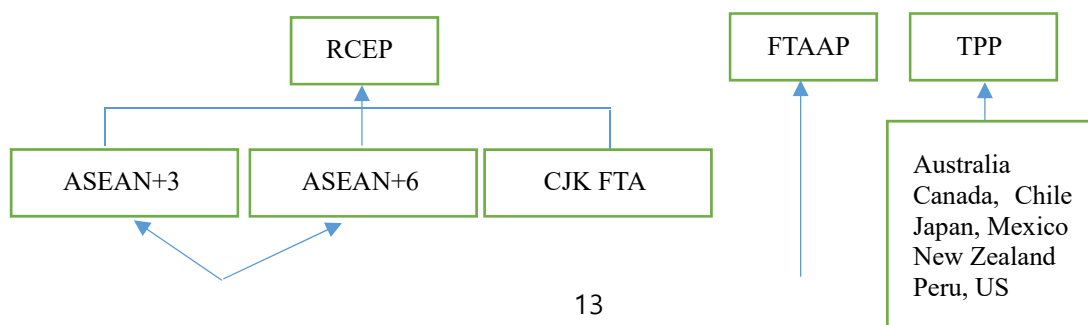
Even though negotiations for the RECP will recognize “ASEAN Centrality” in the regional economic architecture, the developments in competing regional initiatives including the China-Japan-Korea (CJK) FTA and the Trans-Pacific Partnership (TPP) could damage it. Figure 5 provides formation of the RCEP and other competing regional agreements under negotiations.

Finally, individual ASEAN member states are also bound by bilateral and regional trade arrangements. Up to now, about 97 such arrangements have been signed and implemented most of which are comprehensive in coverage.

Empirical Effects of the ASEAN FTA

To analyze determinant factors and patterns of agricultural trade under the ASEAN context, a gravity model is adopted. The gravity model estimates pattern of bilateral trade in terms of economic sizes and geographic distance between two countries. The model is widely used to examine the effectiveness of FTAs, currency unions and common markets (Kepaptsoglou *et al.* 2010). More recent empirical studies using the model tend to focus on whether FTAs result in creating or diverting trade.

Figure 5. Formation of Competing FTAs in East Asia





Note: RCEP=Regional Comprehensive Economic Partnership; CJK=China-Japan-Korea; FTAAP=Free Trade Agreement Asia Pacific; APEC=Asia-Pacific Economic Cooperation; and TPP=Trans-Pacific Partnership
 Source: Author's modification from Chirathivat and Srisangnam (2013)

A trade creation effect occurs when the FTA eliminates existing trade barriers between FTA member countries, leading to a shift in the origin of a product from higher- to lower-cost intra-bloc producers. This creating trade is supposed to improve resource allocation and thus welfare. A trade diversion effect refers to a shift in the origin of a product from lower-cost extra-bloc producers to higher-cost intra-bloc producers, causing a welfare loss and economic inefficiency. Testing the two effects can be carried out by specifying three different sets of FTA dummy variables in the gravity model.

An augmented gravity model is given by:

$$\begin{aligned} \ln M_{ijt} = & \beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln Pop_{it} + \beta_4 \ln Pop_{jt} + \beta_5 \ln Rpop_{it} + \beta_6 \ln Rpop_{jt} \\ & + \beta_7 \ln D_{ijt} + \phi_1 FTA_ASEAN_{ijt} + \phi_2 FTA_M_{ijt} + \phi_3 FTA_X_{ijt} + \sum_k \delta_k P_{ijt} \\ & + \mu_{ijt} \end{aligned}$$

where \ln indicates natural logs. The dependent variable, M_{ijt} denotes agricultural imports of country i from importer j in period t . Y_{it} and Y_{jt} are the gross domestic product (GDP) of country i and j , respectively. GDP is to represent the economic size of the country or the level of economic development. It also captures the production capacity of the exporting country and the purchasing power of the importing country. Accordingly, GDP is likely to show a positive relationship with bilateral trade.

Pop_{it} is the population of country i and Pop_{jt} is the population of country j . $Rpop_{it}$ and $Rpop_{jt}$ are the rural population of country i and j , respectively. The effect of population on trade is not crystal clear. A positive coefficient of the population indicates the country with a larger population can explore economies of scale and trade a wider range of diversified goods with trading partners. Conversely, it is also probable that population and trade marks a negative relationship. Larger populations imply larger domestic markets with richer resource endowment and diversified outputs such that they are less likely to depend international specialization. In a similar vein, the impact of the rural population on agricultural trade between the two countries is ambiguous.

D_{ijt} represents the geographical or economic distance between the two countries. It serves as proxies for transportation costs and delivery time, access to markets and communication costs, and other factors that deter flows of goods across borders. The anticipated sign of the distance variable is negative.

FTA_ASEAN_{ijt} , FTA_M_{ijt} , and FTA_X_{ijt} are binary variables that estimate the trade creation and diversion effects. First, FTA_ASEAN_{ijt} takes a value of 1 if both importer i and exporter j belong to the ASEAN bloc and 0 otherwise. A positive and statistically significant coefficient of the variable confirms the trade creation effect, indicating intra-ASEAN agricultural trade has been expedited further by the FTA.

Second, FTA_M_{ijt} takes a value of 1 if importer i belongs to ASEAN while the exporting country j does not and 0 otherwise. This dummy variable indicates an import diversion effect in ASEAN. A positive and statistically significant coefficient of FTA_M_{ijt} implies ASEAN member countries have shifted their imports from non-member to member countries.

Third, FTA_X_{ijt} takes a value of 1 if importer i is non-ASEAN country and exporter j belongs to ASEAN and 0 otherwise. Defined as an export diversion effect, a positive and statistically significant coefficient of FTA_X_{ijt} indicates ASEAN causes a shift of export from ASEAN member countries to extra-ASEAN countries.

It is necessary to take into account the above binary variables together in order to figure out the trade effects of ASEAN formulation. Looking into the term of intra-ASEAN, ϕ_1 alone is not enough to conclude that the ASEAN bloc generates net trade creation since there may be a trade-off between trade creation and diversion effects. For instance, an increase in intra-ASEAN imports, or $\phi_1 > 0$ may be accompanied by a reduction in imports from extra-ASEAN, or $\phi_2 < 0$. A pure trade creation effect is confirmed by $\phi_1 > 0$ and $\phi_2 > 0$. Table 8 shows possible trade effects with the coefficient combinations of binary variables.

The term of $\sum_k \delta_k P_{ijt}$ includes other binary variables such as sharing a common border (Contig), using the same languages (Lang), and having common colonial experience (Col). These cultural or historical ties are expected to promote agricultural trade between the two countries. Finally, μ_{ijt} is a log-normally distributed error term.

Table 8. Trade Effects According to Coefficient Sets of Binary Variables

	Import Effects		Export Effects	
	$\phi_2 > 0$	$\phi_2 < 0$	$\phi_3 > 0$	$\phi_3 < 0$
$\phi_1 > 0$	Pure TC	TC+MD $\rightarrow \phi_1 > \phi_2$ MD $\rightarrow \phi_1 < \phi_2$	Pure TC	TC+XD $\rightarrow \phi_1 > \phi_3$ XD $\rightarrow \phi_1 < \phi_3$
$\phi_1 < 0$	ME	MD+MC	XE	XD+XC

Note: TC=trade creation; MD=import diversion, ME=expansion of extra-ASEAN import; MC=contraction of intra-ASEAN import; XD=export diversion; XE=expansion of extra-ASEAN export; and XC=contraction of intra-ASEAN

A balanced panel data which treat agricultural trade between pairs of countries over the periods of 1995-2010. Agricultural products are defined by the Harmonized System (HS) codes ranging from 0 to 24 at the two-digit level. The dataset is obtained from the CEPII which covers up to the year of 2006. More recent data are derived from the World Development Indicators database by the World Bank and then added to the dataset.⁹

The presence of many “zero” trade values in the dataset could result in estimation bias (Rooney *et al.* 2001). To deal with this underestimation bias, the Heckman two stage procedure is adopted (Heckman 1979). The first stage is to estimate the Probit model whose dependent variable is a binary variable, representing whether or not trade occurs between the two countries. In the second stage, variables that affect. This procedure is a conditional estimation since it is estimated from a selected sample where there are no zero trade values. In other words, the Probit section model must have a variable other than what the original OLS model contains. Following Bouët *et al.* (2008), this study creates a variable of historical frequency of positive trade and uses it as a selection variable. Consequently, the inverse Mill’s ratio is newly added to the final Random-effect model to address the selection bias.

Besides the Heckman approach, the Tobit model is also useful to handle the zero trade values. As a form of truncated estimation, the Tobit model censors the zero trade values and provides estimated results. Unlike the Heckman method, the Tobit model does not account for selection bias nor heteroskedastic errors. The latter is also stricter than the former in a sense that its estimated parameters heavily depend on distributional assumptions.

Table 9 shows the estimated results of the Tobit model and the Heckman’s two stage model. Only estimates of the Random-effect model are presented since the Fixed-effect model cannot measures binary variables. Since the Tobit and the Random-effect models’ results do not differ greatly, the latter estimates are mainly explained.

As expected, the coefficients of GDP in the two countries turn out positive and statistically significant, confirming a positive relationship between economic size and agricultural trade. When all other things are equal, larger or developed economies seem to produce a greater amount of agricultural goods for export and their higher demand tends to cause more import from the world. As a proxy of transportation and communication costs and other market assess related costs, the coefficient of distance has a significantly negative value, -0.88.

Table 9. Parameter Estimates for the Gravity Models

Variables	Tobit	Heckman Two Stage	
		Probit	Random-effect
Ln (GDP of exporter)	0.5389*** (0.0074)	0.0482* (0.0256)	0.5472*** (0.0081)

⁹ See CEPII (<http://www.cepii.fr>) and The World Bank (<http://data.worldbank.org/data-catalog/world-development-indicators>) for details.

Ln (GDP of Importer)	0.5616*** (0.0069)	0.0605** (0.0261)	0.5720*** (0.0080)
Ln (Distance)	-0.8855*** (0.1899)	-0.0338 (0.0420)	-0.8834*** (0.0195)
Ln (Population of exporter)	0.7068*** (0.0074)	0.0586*** (0.0177)	0.7147*** (0.0085)
Ln (Population of importer)	0.5960*** (0.0071)	0.0498*** (0.0163)	0.6037*** (0.0077)
Ln (Rural population of exporter)	-0.0546*** (0.0209)	0.0960** (0.0444)	-0.0519** (0.0214)
Ln (Rural population of importer)	0.0443** (0.0189)	-0.0091 (0.0548)	0.0406** (0.0190)
FTA_ASEAN	0.9879*** (0.2013)	Dropped	1.1794*** (0.2206)
FTA_M	0.0437 (0.0598)	0.0978 (0.1348)	0.0606 (0.0595)
FTA_X	0.4938*** (0.0585)	0.5585** (0.2584)	0.5102*** (0.0582)
Contiguity	1.1527*** (0.0996)	Dropped	Dropped
Common colony	0.2132*** (0.0529)	0.0840 (0.1210)	0.1867*** (0.0542)
Common language	0.4812*** (0.0701)	0.1240 (0.0932)	0.9436*** (0.0439)
Frequency of positive trade	-	0.0286*** (0.0086)	-
Inverse Mill's ratio	-	-	8.5783* (4.9428)
Constant	-16.6728*** (0.2761)	0.4341 (0.7964)	-17.0987*** (0.3352)
Number of observations	219,378	211,225	212,459
R ²	-	-	0.435

Note: 1. Figures in parentheses are standard errors.

2. ***, ** and * indicate statistical significance at the level of 1%, 5% and 10% levels, respectively.

3. "Contiguity" is dropped due to collinearity.

The positive and significant coefficients of the population indicate economies of scale in production tend to be associated with a larger population and thus extend trade to a greater variety of goods. Interestingly, while the rural population in exporting country shows a significant negative coefficient, a corresponding value of importing country is positive and significant.

The coefficient estimates of FTAs supports the claim that agricultural trade under the ASEAN context is trade creating, not trade diverting. The positive and significant coefficient of intra-ASEAN, or $\phi_1 > 0$ accompanied by the positive and significant coefficient estimate of the export diversion effect (FTA_X) or $\phi_3 > 0$ indicate that ASEAN has expanded its agricultural trade not only within the bloc but also to extra-bloc countries. This may shed light on the fact that agricultural trade is playing an important role to facilitate the region's economic development and rural sustainability.

As expected, historical and cultural ties between the two countries such as sharing a common border (Contig), using the same languages (Lang), and having common colonial experience (Col) have significant effects on agricultural trade.

CONCLUSION

ASEAN member countries have an abundant resource including land and mineral deposits. As the region has embraced globalization and market openness, it is realizing the comparative advantage in the agricultural industry and reaping the benefit of trade liberalization. Despite a relatively declining contribution to the GDP of the countries, agriculture remains as an important sector to keep employment, sustain rural economies and accumulate foreign exchange. The stellar rates of agricultural growth in the transition economies including Cambodia, Laos, Myanmar and Vietnam is another stepping stone to higher economic development. To fulfill the full potential of the CLMV economies, the ASEAN would need to provide proper institutional arrangements that promote a rapid transfer of agricultural technology and market transactions.

Panel data estimate using a gravity model comprising three binary variables provides a persuasive conclusion that the formulation of ASEAN and its subsequent trade reforms have contributed to creating trade of agricultural products. With the successive enlargements in its membership accompanied by deepening its integration into the wider world, ASEAN member countries are encompassing its own goal of achieving a single market and production base.

It will be an ambitious task to predict accurately whether ASEAN's further integration into a wider economic bloc such as ASEAN+3, ASEAN+6 or the RECP will continue to ensure its agricultural growth and sustainability. Recent developments in competing regional initiatives including the China-Japan-Korea (CJK) FTA and the Trans-Pacific Partnership (TPP) could render mixed effects on ASEAN's centrality largely depending on the extent of their coverage and the severity of their trade reforms.

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Submitted as a country paper for the FFTC.NACF International Seminar on *Threats and Opportunities of the Free Trade Agreements in the Asian Region*, Sept. 29- Oct. 3, 2013, Seoul, Korea.