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China, India and AFTA: evolving bilateral agricultural trade and new opportunities through free trade agreements

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ABSTRACT

The purpose of this paper is to review the evolution of bilateral agricultural trade of China, India and AFTA of the ASEAN, and to discuss agricultural trade potentials that might result from bilateral free trade agreements (FTAs) among these dynamic trading blocks. Recent evolutions of the bilateral trade show that while agricultural trade has been expanding significantly, these are often largely driven by 2-3 products, such as palm oil, cotton, raw silk and oil meals, and are thus not as yet broad based. One exception is AFTA's imports from both China and India, which are well diversified. The topic of "opportunities and challenges" is addressed in the paper on the basis of two pieces of analysis. One is the review of agricultural trade complementarity among the three blocks. The other method uses the Vinerian measures of trade creation and trade diversion, assuming that bilateral FTAs among China, India and AFTA are fully implemented. These measures quantify the value of new trade that is created by the FTAs, as well as the value of trade that is diverted away from a non-partner in favour of the FTA partner.

RÉSUMÉ

Le présent document a pour objet de retracer l'évolution du commerce bilatéral des produits agricoles de la Chine, de l'Inde et de la ZLEA de l'ANASE et d'examiner les perspectives ouvertes par des accords bilatéraux de libre échange entre ces blocs dynamiques pour ce qui est du commerce des produits agricoles. L'évolution récente du commerce bilatéral montre que si le commerce des produits agricoles a nettement progressé, cela est dû généralement à deux ou trois produits, tels que l'huile de palme, le coton, la soie brute et les farines d'oléagineux, et que ce phénomène repose donc encore sur une base relativement étroite. Font exception les importations de la ZLEA en provenance de la Chine et de l'Inde, qui sont bien diversifiées. La question des possibilités et des défis est traitée dans le document sur la base de deux analyses. L'une est l'examen de la complémentarité des échanges de produits agricoles entre les trois blocs, l'autre s'appuie sur les mesures vinériennes de la création et de la diversion des échanges, en supposant que les accords de libre échange bilatéraux entre la Chine, l'Inde et la ZLEA sont pleinement appliqués. Ces mesures quantifient la valeur du nouveau commerce créé par les accords de libre échange, ainsi que la valeur du commerce détourné d'un non partenaire en faveur du partenaire de l'accord.

RESUMEN

El objetivo de este documento es examinar la evolución del comercio agrícola bilateral de China, la India y la Zona de Libre Comercio (ZLC) de la Asociación de Naciones del Asia Sudoriental (ASEAN), así como examinar el potencial a nivel de comercio de productos agrícolas que pudiera derivarse de acuerdos bilaterales de libre comercio (ALC) entre estos bloques comerciales dinámicos. La reciente evolución del comercio bilateral muestra que, si bien el comercio agrícola se ha expandido considerablemente, suele estar en gran parte impulsado por 2-3 productos, como el aceite de palma, el algodón, la seda cruda y la harina de semillas oleaginosas, por lo que carece todavía de una base amplia. Una excepción la constituyen las importaciones en la ZLC de la ASEAN procedentes de China y la India, que están bien diversificadas. La cuestión de "las oportunidades y los desafíos" se aborda en el documento mediante dos tipos de análisis. Uno de ellos es el examen de la complementariedad del comercio agrícola en los tres bloques. El otro método usa las medidas vinerianas de creación y desviación del comercio, en el supuesto de que se aplicasen plenamente acuerdos bilaterales de libre comercio entre China, la India y la Zona de Libre Comercio de la ASEAN. Estas medidas cuantifican el valor del nuevo comercio generado por los acuerdos de libre comercio, así como el valor del comercio de los Estados que no forman parte de la ZLC desviado hacia los miembros de la misma.

CONTENTS

I. INTRODUCTION

Asian countries boarded the regionalism train several years back, but the train is accelerating now. At least 20 new proposals for a Preferential Trade Agreement (PTA) – a general term that includes all trade agreements that deviate from the most favoured nation principle - have surfaced in this region in just two recent years.

This drive towards regionalism in Asia is taking different shapes, as is the case in other regions. First, there are the traditional regional PTAs among neighbours like the ASEAN's AFTA and South Asia's SAFTA. Second, there are bilateral PTAs between members of a regional PTA, like that between India and Sri Lanka, and Pakistan and Sri Lanka. Third, some members of these regional PTAs are also entering into bilateral PTAs with other countries in the region, e.g. between Thailand and China, and Pakistan and Malaysia. Fourth, Asian countries are reaching out to outside regions to form bilateral PTAs, like that between China and Chile. Fifth, "collective PTAs" – for lack of a better word – are being formed by members of existing PTAs, e.g. APTA (Bangladesh, China, India, Republic of Korea, Lao PDR and Sri Lanka) and BIMSTEC (Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka and Thailand). Sixth, and as if these are not enough, mega-PTAs have been announced or envisaged, such as the ASEAN + 3, and the Comprehensive Economic Partnership for East Asia (CEPEA), proposed by Japan, which adds India, Australia and New Zealand to ASEAN+3, itself already a mega PTA. A similar proposal has been made by India under the name of "Pan-Asia Free Trade Area". Similar trends are found in other parts of the world also (Fiorentino et al. 2006).

It is a challenge to understand how all these overlapping PTAs work in practice, and what are the net benefits and costs to individual partners to the PTA and to non-partners. All these PTAs are at different stages of implementation – several are just in name only. As a result, assessment of the impact of the PTAs on trade and economic welfare on an *ex post* basis does not make sense at this stage. This is even more so for agricultural trade, big chunks of which tend to be excluded from liberalization, or undergo longer period of implementation. Therefore, most studies in the literature analyse these PTAs on an *ex ante* basis.

The focus of this paper is on bilateral trade agreements among China, India and ASEAN's AFTA. China and India are two undisputed major Asian drivers and trade agreements between themselves and with an equally large block to the south-east will surely – once fully implemented – have far reaching implications not only for the three blocks but also for the rest of Asia and outside the region. Trade agreements among China, India and AFTA (ASEAN) are at different stages of development.

The ASEAN-China Framework Agreement for a FTA was signed in November 2002, with the goal of establishing a free trade area (FTA) by 2010 for ASEAN-6 and by 2015 for the four newer ASEAN members (Cambodia, Viet Nam, Lao PDR and Myanmar). This was the culmination of many years of closer economic and political cooperation between China and ASEAN. An ASEAN-China Expert Group was established earlier to analyse and discuss trade and economic relations. The Group subsequently prepared a report entitled *Forging Closer ASEAN-China Economic Relations in the Twenty-first Century*. In this report, a China-ASEAN FTA was seen as "an important move forward in terms of economic integration in East Asia," as well as "a foundation for the more ambitious vision of an East Asia Free Trade Area, encompassing ASEAN, China, Japan and Korea." The 2002 ASEAN-China Agreement provides for some special and differential treatment for the less developed ASEAN members, including a

more flexible time frame for implementation. The Agreement also included an "early harvest" provisions, i.e. immediate and fast-track liberalization of tariffs for a selected list of products.

India's engagement with the ASEAN started with its "Look East Policy" in 1991. India became a Sectoral Dialogue Partner of ASEAN in 1992 and a Full Dialogue Partner in 1996. Subsequently in November 2001, the ASEAN-India relationship was upgraded to the summit level. An ASEAN-India Trade Negotiating Committee (TNC) has held numerous negotiations for establishing an ASEAN-India Regional Trade and Investment Area (RTIA) which includes a FTA in goods, services and investment. The deadline for concluding the FTA negotiations by end June 2006 and for implementing the FTA from 1 January 2007 was missed. A deal was expected in November 2007 also, but did not materialize. End 2008 is now seen as the new deadline. In the mean time, India has signed a trade agreement with Singapore, and negotiations have been going on for some years for an agreement with Thailand.

On the other hand, China-India FTA is still on the drawing board. The establishment of a Joint Study Group (JSG) in 2003 was an important step in this process. The JSG finalized its report in 2005 and was favourable in its assessment of a potential FTA. It recommended the appointment of a Joint Task force to study in detail the feasibility of a FTA. This task force issued its report in October 2007, stating that in its report that the India-China RTA would be mutually advantageous and the bilateral trade liberalisation will bring welfare gains of one billion dollars to India and 1.5 billion dollars to China. What will happen next is not clear. Recent press reports from India have been apprehensive of a FTA in the short run, arguing that given the differences in China's and India's tariff rates, and some other factors, India will lose or not gain much from such a FTA. So a more concrete outcome on this FTA is expected to take some time. India and China are also members of the Bangkok Agreement and have exchanged trade preferences. However, the coverage of goods under preferences is very narrow for any significant new trade to emerge from this agreement.

Reflecting the importance of PTAs among China, India and AFTA, many studies have been undertaken in recent years. These include Joint Study Groups, which are official technical groups set up by the trade partners to study the feasibility of a PTA, e.g. the India-China study (JSG 2005) and India-Thailand study (Das et al 2002).Then there are several model-based studies, typically using the GTAP or similar (e.g. LINKAGE) general equilibrium models (Lee et al. 2004, Weerahewa and Meilke 2007). There are also many other studies on regional trade in Asia, essentially focusing on China, India and AFTA, outside the formal modelling framework. Examples include Ahmad (2005), Bhattacharya and Bhattacharya (2006), McDonald et al. (2008), Mehta (2002) and Roland-Holst and Weiss (2005). Typically, these studies cover all sectors of the economy, including services trade in some cases. Pasadilla (2006) is an example of a detailed study focused on agriculture and ASEAN/AFTA. One recurring theme in many of these studies is whether the emergence of the Asian drivers and their closer trade relations is a competitive "threat" to their neighbours or an "opportunity" for all.

This paper focuses on agricultural trade and exclusively on bilateral trade among China, India and AFTA. It reviews in detail the evolution of recent agricultural trade among these three blocks based on highly disaggregated trade data (at the HS-4 level). This helps understand the mix of products that are driving the trade. This review also covers non-agricultural trade, albeit briefly, in order to provide a flavour of the evolution of the overall trade. Following this, two pieces of analyses are undertaken to address the topic of opportunities and challenges. One is the review of agricultural trade complementarity among the three blocks. The other uses the Vinerian measures of trade creation and trade diversion, assuming FTAs among the three blocks, to gain some insights on how FTAs will create trade among the partners and also divert from rest of the world.

The rest of the paper is structured as follows. Section II reviews the data, first at the aggregate trade level, and second, bilateral trade among the three blocks. Section III addresses the topic of trading opportunities and challenges, first by discussing trade complementarity among the three blocks, and then analysing potential trade creation and diversion due to FTAs. Section III summarizes the observations.

II. TRENDS IN AGGREGATE AND BILATERAL AGRICULTURAL TRADE

Trends in aggregate trade of China, India and AFTA

To start with, it is useful to review trends in aggregate exports and imports. Table 1 shows these statistics. A number of observations can be made on these trends. First, the data show phenomenal growth in trade during 2000-06. China's non-agricultural exports increased the most, by four times between 2000 and 2006, or at 27 percent per annum. India's non-agricultural exports also grew by three times, averaging 20 percent per annum. In contrast, the growth rate was relatively lower for AFTA, only doubling between these two periods (10 percent per annum). In this period, non-agricultural imports also increased sharply, by about 3.5 times, or about 24 percent per annum, for China and India, and 10 percent per annum for AFTA. As a result of these trends, the already positive trade balance in non-agricultural goods for China and AFTA increased even more, markedly so for China. For India, however, trade balance deteriorated over the period.

Table 1 - Trends in global total imports and exports of AFTA, China and India
(billion $)

Country/ region	Flow	Products	2000	2001	2002	2003	2004	2005	2006	Growth rate per annum 2000-06
			(---------- billion $ ----------)							%
AFTA	Exports	Agriculture	22	24	28	32	37	39	40	10
		Non-agriculture	384	359	374	436	518	601	678	10
		Total	406	383	401	468	554	640	718	10
AFTA	Imports	Agriculture	17	19	20	21	25	27	27	8
		Non-agriculture	332	316	335	377	471	550	588	10
		Total	350	336	355	398	496	577	615	10
China	Exports	Agriculture	13	13	15	18	19	22	26	12
		Non-agriculture	234	250	308	417	571	735	938	26
		Total	247	264	323	435	589	758	964	26
China	Imports	Agriculture	10	10	11	17	25	25	29	22
		Non-agriculture	215	233	285	396	536	634	763	24
		Total	225	244	295	413	561	660	791	24
India	Exports	Agriculture	5	5	6	7	7	9	11	15
		Non-agriculture	40	39	47	56	73	94	115	20
		Total	45	44	52	63	80	103	126	19
India	Imports	Agriculture	3	4	4	5	5	5	7	16
		Non-agriculture	49	48	57	72	103	144	179	25
		Total	51	52	61	77	108	150	185	25

Source: COMTRADE.

Second, the data show that agricultural trade is a small share of total trade for all three blocks. For 2004-06, these are about 5-6 percent for AFTA and India, and just over 3 percent for China. The shares are fairly similar for both exports and imports, except for India for which agricultural export is 9 percent of the total versus 4 percent for agricultural import. Furthermore, as non-agricultural trade expanded relatively rapidly, the share of agriculture trade in the total has tended to fall, especially for China and India on the export side.

Further analysis of the agricultural trade data by source and destination shows a mixed pattern of trade within the three blocks and with outside countries. Table 2 shows these statistics for agricultural trade. Notably, a high share of China's trade is with other countries, with 60 percent of total import sourced from the United States, Africa and Latin America, and 50 percent of the export destined to Japan and the European Union. Some 36-38 percent of AFTA's trade is within the three blocks, but this is largely (about 70 percent) accounted for by intra-AFTA trade itself, i.e. not due to India and China. Yet, AFTA also trades heavily with the United States, European Union, Latin America and Australia-New Zealand. India's exports are much more diversified in terms of destination, but not so on the import side. The 44 percent share of AFTA+China in the table is mostly AFTA, and in palm oil.

Bilateral agricultural trade among China, India and AFTA

Trade between China and India

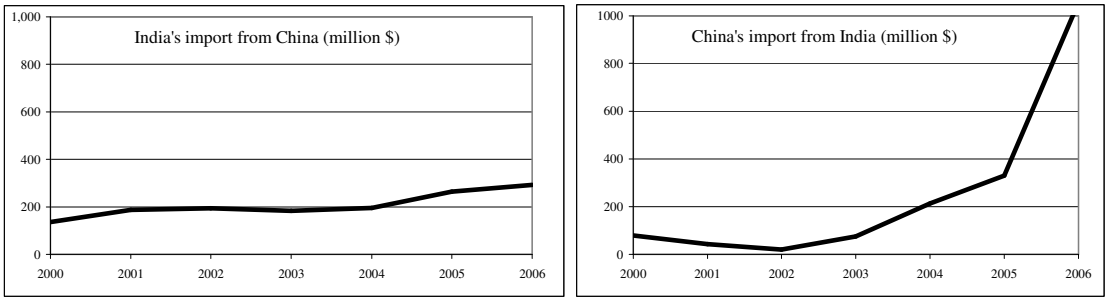
Figure 1 provides a comparative picture of the trends in bilateral agricultural trade. India's import from China was US$137 million in 2000 and remained more or less stagnant at close to US$200 million for the next four years. In the following two years, trade increased by US$100 million to reach close to US$300 million in 2006. Average annual increase during 2000-06 was 15 percent. China's agricultural import from India trended in a very different way. Imports actually declined after 2000, reaching as low as US$20 million in 2002. Imports picked up after 2002, rising by US$100 million in both 2004 and 2005, and by US$727 million in 2006 alone, thus exceeding one billion dollar mark for the first time. What would be most interesting is the trend beyond 2006, i.e. whether imports will continue to surge or grow only slowly as in earlier years.

Table 2 - Sources and destinations of agricultural trade of AFTA, China and India
(in percent, 2003-05 average)

		AFTA China India	Japan Korea, Rep.	ANZ	EU-27	US	Africa Latin Amer.	SAFTA minus India	RoW	Total
AFTA	Imports	38	1.5	16	12	14	14	0	5	100
	Exports	36	11	2	14	10	8	4	15	100
China	Imports	15	1.3	12	5	28	32	0.2	7	100
	Exports	12	39	1.1	11	9	5	0.9	23	100
India	Imports	44	0.3	4	4	5	29	5	8	100
	Exports	18	5	0.9	16	9	9	15	27	100

Note: ANZ is Australia and New Zealand total. RoW is rest of the world.
Source: COMTRADE.

Figure 1 - Agricultural trade between India and China
(million $)



Source: COMTRADE.

Table 3 shows key products at the sub-heading level (HS2) imported by India from China during 2000-06. Raw silk dominates the import basket, accounting for 50 percent or more of the total in each year (indeed over 60 percent, except in 2002 and 2006). Next in importance was edible vegetables (HS07) accounting for about 14 percent of the total in recent years but with considerable fluctuations in value. About 20 percent of the vegetables imported from China are onions, shallots and garlic (HS0703) and 77 percent are dried leguminous vegetables (HS0713), namely beans and peas. The data also show increasing product diversity: in 2003, only three products exceeded US$10 million (raw silk, vegetables and wool); in 2006, there were three additional products exceeding US$10 million (beverages/spirits, products of animal origin and coffee, tea etc.). In addition, there were significant imports of fruits, vegetable preparations and residues/wastes. Thus, overall, there has been both growth and product diversification.

Table 3 - India's imports of agricultural products from China
(million $)

Product	HS	2000	2001	2002	2003	2004	2005	2006
Products of animal origin	05	5	6	7	4	6	7	12
Edible vegetables, roots	07	3	30	44	24	16	22	42
Edible fruit and nuts	08	0	2	3	3	4	5	9
Coffee, tea, mate, spices	09	6	11	13	8	8	8	11
Oil seeds, oleagi fruits ..	12	1	1	2	3	2	5	3
Prep of vegetable, fruit..	20	0	0	1	3	2	4	7
Beverages, spirits and vinegar	22	0	0	0	0	1	0	23
Residues from food industry	23	2	8	5	5	6	9	8
Raw silk	5002	98	124	106	112	123	173	143
Silk waste (incl. cocoons)	5003	0	2	2	3	2	4	3
Wool, not carded or combed	5101	0	1	2	13	15	16	15
Rest of the products	-	21	4	10	5	10	12	18
All total		137	189	194	183	195	264	293

Source: COMTRADE.

As above, Table 4 shows key products (at HS2 level) imported by China from India. The data do not show consistent import trend except for the last three years. In 2002, oils and fats and food industry residues were prominent but their share fell markedly in the next 2-3 years, and picked up again. From 2004, cotton emerged as the most important traded product, accounting for 46 percent of the total in 2005 and 73 percent in 2006 (for a value of US$765 million). There was no trade in cotton in the previous years. Residues from food industry (oil meals) were another surge item beginning in 2004, followed by oils and fats. The only product that has featured prominently in all the years and seems to be picking up in recent years is edible vegetables, almost 100 percent being dried leguminous vegetables (HS0713). Aside from the seven products shown in the table,

the rest together accounted for a very small share, only 4-5 percent of the total, except during 2001-03 when their combined share was 10-20 percent.

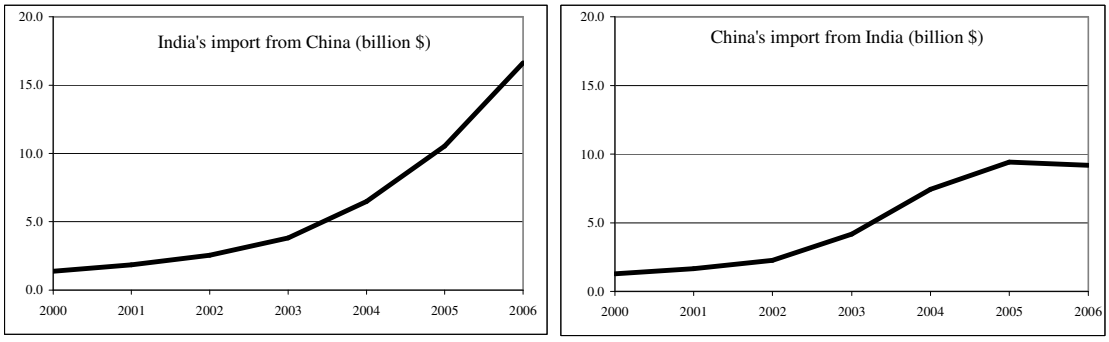
Table 4 - China's imports of agricultural products from India
(million US$)

Product	HS	2000	2001	2002	2003	2004	2005	2006
Edible vegetables, roots	07	10	6	5	8	10	19	27
Oil seeds, oleagi fruits ..	12	2	2	2	33	39	13	13
Lac, gums, resins ...	13	9	3	4	5	5	6	7
Animal/veg fats & oils	15	27	4	4	16	38	55	62
Sugars and confectionery	17	8	13	0	0	0	0	0
Residues from food industry	23	20	8	0	2	41	67	163
Cotton, not carded, combed	5201	0	0	0	3	71	151	765
Rest of the products	-	3	6	4	7	9	18	18
All total		79	43	20	75	213	330	1,056

Source: COMTRADE.

A few words on trends in non-agricultural trade. Figure 2 shows that non-agricultural trade between India and China has been, on the whole, not only balanced in value but also similar in trend, with an exception for 2006. For both countries, import values were low initially, about $1.3 billion, and rising similarly to reach about $10 billion by 2005. The big difference was for 2006 when India's import soared by an extra $6 billion to reach a total of $16 billion, while China's import from India remained at the 2005 level.

Figure 2 - Non-agricultural trade between India and China
(billion $)



Source: COMTRADE.

In a way, this was the reverse of the pattern seen for agricultural trade (Figure 1) where China's imports surged in 2006 while India's remained flat. All in all, bilateral trade grew markedly, averaging 52 percent per annum for India during 2000-06 and 42 percent for China.

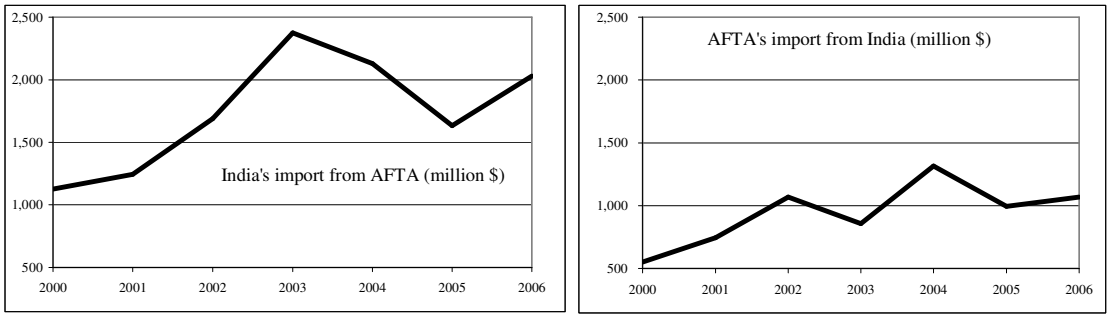
Six or seven product groups at HS2 level dominate India's imports from China. These are minerals, fuels and oils (HS27), electrical machinery (HS85), nuclear reactors, boilers (HS84), organic matters (HS29), iron and steel (HS72 and 73), and plastics (HS39). In 2006 when India's imports from China increased by US$6 billion, 24 percent of this was electrical machinery, 22 percent iron and steel and their articles, 18 percent nuclear reactors, 6 percent organic materials and 3 percent plastics. In the case of the Chinese imports, iron ores (HS26) accounted for the highest share in the total in all years: the share was about 30 percent during 2000-03 and doubled to close to 60 percent in 2004-06 (over US$5 billion of trade in 2005 and 2006). Other important products, ranging between 5-10 percent of the total, are cotton products (HS52), organic

chemicals, plastics, and iron and steel. Between 2003 and 2006 when trade surged by an extra US$5 billion, ores (HS26) alone accounted for 78 percent of the growth. Seen in this sense, China's imports from India can be said to be highly concentrated, and much more than India's imports from China.

Trade between India and AFTA

Figure 3 provides comparative trends in bilateral agricultural trade between India and AFTA. India's imports from AFTA doubled during 2000-06 but with marked ups and downs. Trade was just over US$1 billion in 2000 and more than doubled to reach US$2.4 billion in 2003 but fell again in the next two years and finally recovered to US$2 billion in 2006. AFTA's import from India was US$550 million in 2000, half of India's import from AFTA. By 2006, total import doubled but with several ups and downs – the highest ever being US$1.3 billion in 2004. The overall trend is positive but what happens next is difficult to predict in view of the ups and downs. Perhaps product composition of the trade can help understand to some extent the future growth.

Figure 3 - Agricultural trade between India and AFTA
(million US$)



Source: COMTRADE.

Table 5 shows trends in India's imports of nine HS2 products that together accounted for almost 100 percent of the total agricultural imports. One product – vegetable oil (palm oil) – dominates the trade, accounting for as high as 80 percent or more of the total in four of the seven years. When India's total import rose by over one billion dollar in 2003 from 2001, 98 percent of the rise was due to vegetable oils. Oil was also mostly responsible for the slump in total trade in 2005. Over time, however, imports of products other than vegetable oils have increased markedly, from US$140 million in 2000 to US$730 million in 2006. Almost 80 percent of this additional trade of US$590 million was due to edible vegetables whose imports rose by 10 times from 2000 to 2006. The other three products whose trade grew markedly were fruits, coffee and tea, and food industry residues. The most recent trend therefore points to growth with product diversity. Indeed, vegetables - and not oils - accounted for 60 percent of the increase in trade in 2006 from 2005. Almost 100 percent the vegetables are dried leguminous vegetables (HS0713).

Table 5 - India's imports of agricultural products from AFTA
(million US$)

Product	HS2	2000	2001	2002	2003	2004	2005	2006
Edible vegetables	07	48	265	238	231	172	255	499
Edible fruit and nuts	08	27	11	40	43	68	75	60
Coffee, tea, spices.	09	22	29	32	46	51	88	74
Oil seed, oleagi fruits	12	2	2	3	7	6	8	8
Lac, gums, resins ...	13	7	8	8	7	11	19	21
Animal/veg fats & oils	15	987	891	1,333	1,999	1,766	1,131	1,299
Sugars and confectionery	17	2	2	1	1	12	4	1
Cocoa and cocoa preparations	18	4	5	9	8	7	6	7
Residues & from food industry	23	8	10	12	20	20	26	29
Rest of the products	-	19	20	13	15	17	22	30
Total agriculture		1,127	1,243	1,689	2,377	2,130	1,633	2,029

Source: COMTRADE.

Table 6 shows AFTA's imports of agricultural products from India. Two products explain the big swings in total trade seen in Figure 3. The surge in 2002 was almost fully due to cereals. This was a one-time surge; cereal trade halved the next year and dropped to very low level by 2005. The surge of 2004, an additional trade of US$460 million, was largely due to oil meals (HS23) whose imports from AFTA doubled to over US$500 million in 2004. Reduction in trade in oil meals, as well as in cereals, led to lower total trade in 2005 and 2006. Aside from these sharp ups and downs in cereals and oil meals, the overall trend is significantly positive. Total trade, minus cereals and oil meal, more than doubled from US$334 million in 2006 to US$721 million in 2006. A number of products contributed to this growth, the notable ones being meat, vegetables, oilseeds, tea and coffee, and cotton. In view of this diversity of products traded, there is a good basis for further growth of India's exports to AFTA. Of course, oil meals will continue to play a dominating role in view of India's cost advantage and substantial surplus position in oil meals, coupled with AFTA's strong demand for oil meals from the meat sector.

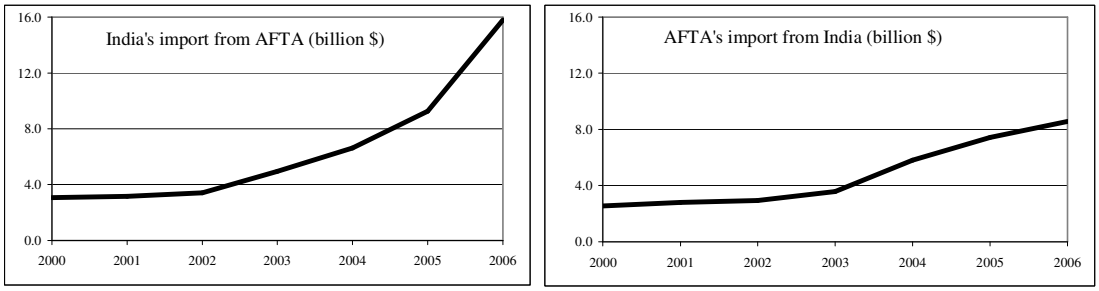
Table 6 - AFTA's imports of agricultural products from India
(million US$)

Product	HS2	2000	2001	2002	2003	2004	2005	2006
Meat and edible meat offal	02	130	133	136	136	193	217	230
Edible vegetables	07	35	40	37	47	55	61	78
Edible fruit and nuts	08	12	9	9	9	10	10	10
Coffee, tea, spices.	09	26	25	26	24	51	43	60
Cereals	10	18	131	476	267	259	55	40
Oil seed, oleagi fruits	12	57	52	38	45	59	63	86
Animal/veg fats & oils	15	19	15	16	17	22	24	25
Sugars and confectionery	17	4	48	27	53	6	8	24
Misclln. edible preparations	21	7	7	6	7	12	15	15
Residues & from food ind.	23	200	241	236	190	533	370	307
Tobacco and mnfctrd. tobacco	24	8	8	11	9	12	34	36
Cotton, not carded or combed	5201	0	1	2	6	48	39	97
Rest of the products	-	37	36	48	46	58	55	58
Total agriculture		552	745	1,069	857	1,317	994	1,068

Source: COMTRADE.

Figure 4 shows trade statistics for non-agricultural goods. Mirroring the trend in India's non-agricultural imports from China, the data show sharp surges in India's imports in recent years whereas AFTA's imports from India did increase but not surge as much. From about US$3 billion during 2000-02, India's imports reached US$16 billion by 2006. On the other hand, AFTA's imports from India – from similar level initially – increased after 2003 to reach about US$9 billion in 2006.

Figure 4 - Non-agricultural trade between India and AFTA
(billion US$)



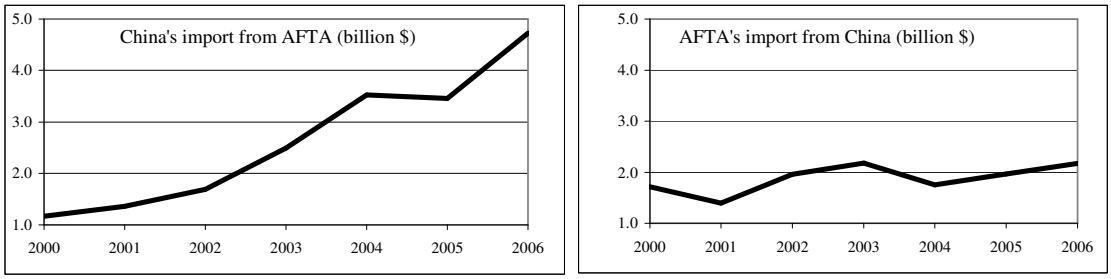
Source: COMTRADE.

Comparing India's imports from AFTA between 2003 and 2006, when trade increased by three times, or an additional US$11 billion, the data show that 6-7 products at HS2 level accounted for 82 percent of this increase, as follows: 46 percent mineral fuels (HS27); 12 percent nuclear reactors etc. (HS84); 9 percent electrical machinery (HS84); 7 percent ores (HS26); 5 percent organic materials; and 5 percent iron and steel (HS72). Essentially, these same HS2 chapters account for bulk of the increase in AFTA's imports from India, which amounted to an extra US$5 billion between 2003 and 2006. HS27, mineral fuels and oils including coal, alone accounted for 50 percent of the additional US$5 billion trade. Other prominent HS2 chapters were: organic materials; natural/cultured pearls and precious stones; iron and steel; railway vehicles (HS87); electrical machinery (HS84); copper and articles thereof; and nuclear reactors and boilers.

Trade between China and AFTA

Figure 5 shows different patterns of growth in the China-AFTA bilateral agricultural trade during 2000-06. China's imports from AFTA grew steadily and strongly during the period, from US$1.2 billion in 2000 to US$4.7 billion in 2006. On the other hand, AFTA's imports from China have fluctuated around US$2 billion mark throughout the period. This was somewhat unexpected, given the general expectation of rising trade between these two trading partners. This is also somewhat different from the trend in non-agricultural trade (Figure 6 below) which increased markedly in both directions, albeit again China's imports from AFTA grew much faster than the other way around.

Figure 5 - Agricultural trade between China and AFTA
(billion US$)



Source: COMTRADE.

Table 7 shows trends in China's imports from AFTA for key products that together account for about 96-98 percent of the total agricultural import. The most conspicuous single item is vegetable oils (palm oil), whose imports rose from about US$600 million in 2000 and 2001 to about US$2 billion in 2004 and 2005, and surged to US$2.7 billion in 2006. These amount to about 60 percent of the total imports in most years. Perhaps somewhat unlike the pattern noted in the previous bilateral trade trends, China's imports from AFTA of other agricultural goods also increased markedly in this period. Import of the rest of the products (i.e. other than vegetable oils) increased by four times from US$500 million in 2000 to almost US$2 billion in 2006. These high growth products include cassava, fruits, rice, products of the milling industry and cereal preparations.

Table 7 - China's imports of agricultural products from AFTA
(million US$)

Product	HS2	2000	2001	2002	2003	2004	2005	2006
Edible vegetables	07	24	155	145	196	349	425	625
Edible fruit and nuts	08	164	198	216	249	304	345	398
Coffee, tea, spices	09	10	11	12	12	11	16	24
Cereals	10	112	101	80	97	252	197	292
Prod.mill.indust, starches	11	20	38	48	77	137	108	181
Oil seed, oleagi fruits	12	13	18	20	28	31	32	40
Vegetable plaiting materials	14	24	24	26	30	30	31	31
Animal/veg fats & oils	15	631	584	963	1,609	2,158	2,030	2,734
Sugars and confectionery	17	25	115	43	38	70	50	85
Cocoa and cocoa preprns.	18	28	26	24	41	44	66	75
Prep.of cereal, flour	19	4	4	44	34	51	58	108
Miscellan. edible preprns.	21	8	9	10	14	19	18	20
Residues & from food ind.	23	34	21	12	15	20	31	38
Rest of the products	-	64	54	46	51	48	48	79
Total agriculture		1,163	1,358	1,688	2,490	3,524	3,455	4,729

Source: COMTRADE.

Table 8 shows agricultural trade in the reverse direction, i.e. AFTA's imports from China. The very fact that this table is bigger (more rows) than all previous tables on products conveys an important message: that AFTA's imports from China are more diversified. No single product dominates trade, e.g. with shares of 50-60 percent of the total as seen in the previous cases. Cereals account for the maximum share during 2000-06 (17 percent of total, 25 percent during 2000-03, and much lower thereafter) and vegetables (16 percent). Among cereals, 72 percent has been maize and about 14 percent wheat and rice each. There are several high growth products: vegetables, fruits and nuts, vegetable oils, sugar and sugar confectionary, miscellaneous edible products (HS21), and preparations of cereals and vegetables (HS19 and HS20). So, overall, imports are much more diversified.

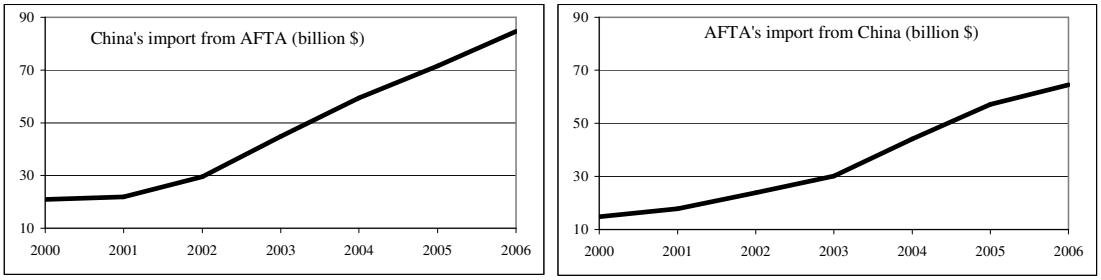
Table 8 - AFTA's imports of agricultural products from China
(million US$)

Product	HS2	2000	2001	2002	2003	2004	2005	2006
Meat and edible meat offal	02	37	56	57	31	30	25	22
Products of animal origin, nes	05	18	19	22	21	21	30	18
Edible vegetables	07	151	197	245	283	328	400	490
Edible fruit and nuts	08	177	186	233	265	281	341	403
Coffee, tea, spices	09	52	65	67	55	78	65	84
Cereals	10	544	183	492	612	166	139	167
Prod.mill.indust, starches	11	43	41	60	52	40	42	58
Oil seed, oleagi fruits	12	102	90	115	108	104	100	103
Animal/veg fats & oils	15	11	13	13	17	25	32	25
Prep of meat, fish	16	40	52	56	49	52	58	62
Sugars and confectionery	17	27	25	50	50	50	75	85
Prep.of cereal, flour	19	32	31	36	49	54	56	60
Prep of vegtble, fruit, nuts	20	59	66	80	86	90	104	119
Miscellan. edible prepartns.	21	21	27	34	39	64	77	104
Residues & from food ind.	23	50	74	132	100	94	80	67
Tobacco, mnfctrd. tobacco	24	122	171	135	152	170	222	171
Cotton, not carded or combed	5201	170	19	44	110	9	4	2
Rest of the products	-	58	75	83	95	93	113	131
Total agriculture		1,715	1,392	1,955	2,175	1,750	1,964	2,170

Source: COMTRADE.

Figure 6 shows that non-agricultural import of China from AFTA increased by four times between 2000 and 2006, from just over US$20 billion to US$85 billion, averaging 27 percent per annum, the same growth rate as for agricultural trade. Imports did surge especially after 2002. A total of eight HS2 chapters account for 90 percent of China's total imports from AFTA. The most dynamic chapter is electrical machinery and components (HS85), with imports growing eight times to reach US$40 billion in 2006 from only US$5 billion in 2000. As a result, its share in the total import was 47 percent in 2006. The other seven chapters that together (along with HS85) account for 90 percent of the total trade in 2006 are nuclear reactors and boilers (HS84), fuels and oils (HS27), plastics, rubber, organic chemicals, wood and products, and optical products.

Figure 6 - Non-agricultural trade between China and AFTA
(billion US$)



Source: COMTRADE.

AFTA's imports from China also increased by four times during 2000-06, from US$15 billion in 2000 to US$65 billion in 2006, averaging 28 percent per annum. Interestingly, the same two products that were most prominent in China's import from AFTA, namely electrical machinery and components, and nuclear reactors and boilers, also accounted for 62 percent of AFTA's total import from China, suggesting significant intra-industry trade. Trade increased by five times for both these chapters during 2000 and 2006. Other HS2 chapters for which trade was both significant and rapid are iron and steel (increased seven times), articles of iron and steel, HS73 (six times), and optical instruments and plastics (both about five times). While these products

carry large weights in the total, the data show that trade did indeed expand across a wide range of the HS chapters.

III. UNDERSTANDING THE TRADE AND ECONOMIC IMPLICATIONS OF BILATERAL FTAs

Following the review of the evolution of trade, this section discusses two pieces of analyses that address the topic of opportunities and challenges. One is the review of agricultural trade complementarity among the three blocks. The other uses the Vinerian measures of trade creation and trade diversion, assuming FTAs among the three blocks, to gain some insights on how FTAs will create trade among the partners and also divert from rest of the world.

Agricultural trade complementarity among AFTA, China and India

For intra-trade to expand following the formation of a FTA, there should be potentials for trade, i.e. the overall structure of a country's exports should match those of the partner's imports. One measure that shows such a match is trade complementarity index or TCI. The TCI between countries i and j is defined as:

$$TCI_{ij} = 100 - \sum (|m_{ik} - x_{ij}| / 2)$$

where x_{ij} is the share of good i in global export of country j and m_{ik} is the share of good i in global import of country k. The index is zero when no good exported by one country is imported by the other, and 100 when the export-import shares exactly match. Thus, higher values of the index indicate more favourable prospects for a successful trade arrangement between countries.

Table 9 shows agricultural TCIs for AFTA, China and India.[2] Note that there are two indices for each pair of trading partners, one for import and the other for export. Accordingly, three pairs of indices are discussed here.

Table 9 - Trade complementarity indices among AFTA, China and India

	---- China and India -----		---- China and AFTA ----		---- India and AFTA ----	
	China's M/ India's X	India's M/ China's X	China's M/ AFTA's X	AFTA's M/ China's X	India's M/ AFTA's X	AFTA's M/ India's X
Agricultural trade, 2006	26	13	29	34	33	41
Agricultural trade, 2000	17	15	29	37	30	35
Non-agricultural trade, 2006	31	29	59	43	39	36

Source: Author, based on COMTRADE data (at the HS-4 level).

India's imports and China's exports (index = 13): This fairly low index for the combination of India as an importer and China as an exporter is not surprising when the data show that 50 percent of China's total export that cover top 15 exports (at HS4 level) corresponds to only 1.5 percent of India's total imports from the world. China's top export products like crustaceans and other aquatic (HS1605), prepared or preserved fish (HS1605), preserved and prepared meats (HS1602),

[2] Unless stated so, all the references in this section to "total export" and "total import" are to "total agricultural export" and "total agricultural import", and for the year 2006. The table also shows for comparison purpose agricultural indices for 2000 and non-agricultural indices for 2006.

onions and garlic, fruit juices etc. are hardly imported by India. Indeed, some of these products (prepared or preserved fish, onions and tea) are also big export products of India – hence the small value of the index.

China's imports and India's exports (index = 26): In contrast, 71 percent of China's total import which covers top 10 products corresponds to 18 percent of India's total exports. For this reason, the TCI is 26, twice the value above. However, the data show that this is largely due to cotton. In 2006, cotton was a large export item for India (12 percent of the total export) and also a large import item for China (17 percent of the total) from virtually negligible amounts in 2000. When cotton is excluded from the calculation, the TCI drops from 26 to 16, which is similar to the TCI for 2000. For other highly traded products, exports and imports do not match very well, although there are good prospects for tobacco, rice, oilseeds and oilcakes – products that India exports in large amounts and China also imports.

China's imports and AFTA's exports (index = 29): Some 70 percent of China's total import that covers the top ten products corresponds to 29 percent of AFTA's global export. While on the whole this is a reasonably good match, one product dominates the list – palm oil alone accounts for 25 percent of AFTA's total agricultural export. AFTA hardly exports several other products in China's top import list, notably soybeans and soy oil, cotton, wool, hides and wheat flours. Only cassava, sugar and meats are prominent products that feature high in AFTA's exports to world and China's imports from the world. Besides these, there are many other products where the trade profiles of the two blocks match well – and this is the reason why the TCI is 29. Indeed, the TCI falls only to 24 (from 29) when palm oil is excluded from the calculation, despite its very large weight.

AFTA's imports and China's exports (index = 34): AFTA's imports of agricultural products are highly diversified, with no single product dominating the import basket (the maximum share is 7 percent of the total, wheat and meslin). For this reason, 15 top products make up only 50 percent of the total import. These include wheat, dairy, oil cake, cotton, sugar, rice, soybeans, cocoa, food preparations, maize and food preparations. Except for the last three, these products do not feature notably in China's export basket (the 15 products amount to only 8 percent in China's total export). Despite this being the case for the top products, the TCI is relatively high at 34, the main reason being that for most of the remaining products there is a fairly high degree of match between China's exports and AFTA's imports. This points to potentials for increased trade between AFTA and China in a wide variety of agricultural products.

India's imports and AFTA's exports (index = 33): This relatively higher index gives a somewhat wrong impression in that except for palm oil, AFTA's exports and India's imports do not match up for top products that India imports. About 80 percent of India's total import, which covers top 10 products, amounts to just 30 percent of AFTA's global export. The latter falls to a mere 5 percent if palm oil is excluded, and the TCI itself drops to 19. AFTA does not export other major Indian imports which include wheat, peas and beans, soybean oil, cashew nuts, wool, silk and cotton. In the 200 or so products covered at HS4 level, one finds many common products – thus giving higher TCI - but their value of trade is very small. It is possible that with a PTA trade in these products might expand in the future, but there is no way of projecting it based on current pattern and trend of bilateral trade.

AFTA's imports and India's exports (index = 41): This is the highest index among the six cases analysed. Overall, the top 10 products that make up 45 percent of AFTA's imports from the world also account for 41 percent of India's exports. Indeed, the data show that there are four products

among the top 10 with a good complementarity relation. These are oilcakes (with 9 percent share in India's total export and 6 percent share in AFTA's total import), cotton (12 percent and 5 percent shares respectively), sugar (6 percent and 4.4 percent respectively) and rice (14 percent and 4 percent respectively). Further down the list, there are several other products that match well, e.g. unmanufactured tobacco, onions and bovine meat. This is a good indication of potentials for India's exports of a diverse range of agricultural products to AFTA.

Three further comments on the indices. First, Table 9 also shows that agricultural trade complementarity did increase substantially between 2000 and 2006 for China's imports and India's export. Cotton is a major factor here. On the other hand, there was no improvement for trade in the reverse direction. Very little change has taken place in the two indices for trade potentials between AFTA and China, which was somewhat unexpected in view of the rapid growth in overall trade. Complementarity has also improved markedly for AFTA's imports and India's exports, but not the other way – indeed the index has fallen in 2006. Second, for non-agricultural trade, the table shows that except for one case (AFTA's import and India's export), the TCIs are higher than for agricultural trade, markedly so in some cases. This high potential, and no doubt growing too, is indeed the dominant theme common in most studies and commentaries on bilateral trade agreements among AFTA, China and India. Growing intra-industry trade is a major driver of this trade, something that is not that significant for agricultural trade.

It is not usual that one finds low TCIs among developing country PTAs, especially for agriculture and for countries from the same reason. Due to reasons such as similar climates, resource endowments, consumption patterns and levels of development, the structure of agricultural production and trade tends not to be very different, giving low TCIs. For example, the estimates in Yeats (1989) show that these indices, at the time the PTAs were formed, were already as high as 64 for Canada and the US in the CUSFTA and 53 for EU-6. In contrast, the TCI was 29 for MERCOSUR, only 7.4 for the Andean Pact and in the range of 2.4 to 27.9 for 18 possible PTAs in Africa, with indices of less than 10 for nine of the 18 PTAs. Seen against this benchmark, the indices for AFTA, China and India do not look that low with the exception of one case in Table 9.

Analysis of trade creation and trade diversion

Following the seminal work of Viner, the impact of a PTA is typically analysed in terms of trade creation and trade diversion. Trade creation (TC) measures the increase in imports from the PTA partner as tariff is lowered and import price falls relative to the price of the domestic good. The impact on the importing country is reduced domestic production, increased consumption and lower tariff revenue. TC is considered to be a welfare gain. Trade diversion (TD) measures the increase in imports from the PTA partner as the change in the relative import price favours the partner vis-à-vis non-partners. This trade is not additional but diverted from non-partners. As trade is diverted to the higher-cost partner but not recouped in lower domestic prices to consumers, and since the previous tariff revenue accrues as profit to producers in the partner country, TD is considered to be a welfare loss. In this sense, the overall impact on welfare is positive when TC exceeds TD.

All the main partial equilibrium models compute TC as a change in import (ΔM_{TC}) as follows:[3]

$$TC = \Delta M_{TC} = M_0 \,.\, \eta_m \,.\, \Delta t/(1+ t_0) \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where, M_0 is base period import from the PTA partner, η_m is elasticity of import demand, and $\Delta t/(1+ t_0)$ is the change in tariff that measures the change in domestic price following the tariff change. Here, Δt is $(t_1 - t_0)$, with t_0 and t_1 being tariff rates before and after the formation of the PTA.

Indeed, formula (1) is derived from the basic definition of price elasticity of import demand, $\eta_m = - (\Delta M/M_0)/(\Delta P/P_0)$, after substituting the term for percentage change in domestic price ($\Delta P/P_0$) with change in the tariff, i.e. $\Delta P/P_0 = \Delta t/(1+ t_0)$. The parameter η_m plays a significant role - a doubling of the value of η_m doubles the value of TC.

For TD, there are different formulae, some being variants of each other, that can capture the value of diverted trade. Formula (3) below, derived from the basic definition of the elasticity of substitution (formula 2), is widely used. This is also the formula used in the SMART software, available within WITS.

The elasticity of substitution as the percentage change in *relative* import from a PTA partner and non-partners associated with a one percent change in *relative* prices of the same product from the two sources is defined as follows:

$$\sigma_{P\text{-}NP} = [\Delta(M_P/M_{NP})/ (M_P/M_{NP})] / [\Delta(P_P/P_{NP})/(P_P/P_{NP})] \quad \ldots\ldots\ldots (2)$$

where, $\sigma_{P\text{-}NP}$ is the elasticity of substitution, M_P and M_{NP} are import values in the base period from partner and non-partner countries respectively, P_P and P_{NP} are likewise prices of the product imported from the partner and non-partner countries, and Δ indicates change.

By taking partial derivates of the numerator and the denominator and following some algebra, the expression for TD is derived as follows:

$$TD = \Delta M_{TD} = [M_P \,.\, M_{NP} \,.\, \{\Delta t/(1+ t_0) \,.\, \sigma_{P\text{-}NP}\} / [M_P + M_{NP}] \quad \ldots\ldots\ldots (3)^4$$

TC and TD are computed using base period bilateral import values from COMTRADE and base period applied tariffs from TRAINS (both accessed through WITS). The analysis covers all agricultural products as defined by the WTO Agreement on Agriculture, i.e. HS1 to HS24, minus fisheries (HS3), plus several other products in other chapters (e.g. cotton, wool, silk, hides and skins). Trade and tariff data are at the heading level (HS4). A value of 1.5 is used for import demand elasticity and 1.6 for substitution elasticity, for all products and countries. These are behavioural parameters and so their values are difficult to pin down. For η_m, analysts typically use

[3] In the literature, there are mainly three formulas (to some extent, variants of each other) for calculating TD, while TC formula is very similar, if not identical. The formulas used here follow from the basic definitions of import demand elasticity and elasticity of substitution among sources. See Laird and Yeats (1986) and Jammes and Olarreaga (2005) for further details.

[4] While this is the basic formula, the SMART software uses a variant that automatically constrains the formula so that the computed TD does not exceed the base period import from non-partners (this has to hold by definition of the TD). All calculations for this paper were done in Excel using formula (3) with a "if" statement that ensured this requirement.

values in the range of -1 to -4. What is known is that for products with low import penetration ratio, η_m can be very large, but relatively small where import penetration is high. Similar to η_m, a doubling of the value of σ, say from -1.6 to -3.2, increases the value of TD considerably, but does not double it. In all the calculations, the value of export elasticity is assumed to be infinite, i.e. when China forms a PTA with AFTA, it is assumed that China or AFTA can supply all additional trade (i.e. TC+TD) at fixed prices (i.e. without raising export prices).

For all these reasons, it is important to read the computed values of TC and TD with some caution, given the significant role that these parameters play. A safer assessment of the results would be to read them in a relative sense because since the same parameter values are used for all countries and products, at least the relative bias due to the parameter values is taken care of.

Base period tariff rates are one of the determinants of the values of TC and TD and so it is useful to take note of them. Table 10 shows average tariff rate that bilateral imports faced in the partner's market. As is well known, AFTA tariffs are fairly low, followed by tariffs in China and then in India. In some cases, the difference between the simple average and the weighted average tariff rates is very large due to the concentration of the traded products. For example, India's 74 percent weighted tariff on import from AFTA, versus 38 percent simple average, is due to high tariff on palm oil which weighs very heavily in India's import basket from AFTA, but this is not the case for imports from China. The table also shows significant variations in both the values of bilateral trade (these were discussed earlier in Section II) and the number of products (at HS-4 level) traded between the partners.

Table 11 summarizes the results for TC and TD.[5] Note that there are three pairs of results, one for each PTA. For example, for a PTA between China and India, there will be TC in the Indian market for China and trade diverted in the Indian market in favour of China away from non-partners, or rest of the world, as well as the same set of TC and TD in the Chinese market for India. The last column shows the size of the trade diverted, measured as TD as percent of base period import from rest of the world.

FTA between China and India

TC and TD for India in China: The total value of additional trade, i.e. TC+TD, for India in the Chinese market is US$662 million, with US$356 million as TC and US$306 million as TD. This additional trade amounts to 62 percent of China's base period import from India, and 4.5 percent of China's total import from the world.

[5] In the calculations of the TC and TD, final tariffs (i.e. after forming PTAs) are set to zero, i.e. it is assumed that the PTAs are FTAs in the real sense of the term.

Table 10 - Average tariff facing imports from bilateral partners

	Value of trade (million $)	Tariff lines traded (#) 1/	Average tariff facing imports (%) Simple average	Weighted average
China and India				
China imports from India	1,056	87	16.7	30.7
India imports from China	293	112	39.1	42.5
India and AFTA				
India imports from AFTA	2,029	144	38.3	74.0
AFTA imports from India	1,068	167	5.3	3.7
AFTA and China				
AFTA imports from China	2,170	196	7.8	6.8
China imports from AFTA	4,729	152	16.1	14.6

1/ These are the total number of tariff lines at the HS-4 level where there was some trade in 2006.
Notes: Values of bilateral trade were discussed earlier in Section II. Average tariff rates are for 1995 and are based on all traded tariff lines at the HS-4 level – the last column shows average tariff weighted by bilateral import values.
Source: Author, based on COMTRADE and TRAINS data (through WITS).

Table 11 - Values of trade creation and trade diversion following bilateral FTAs

	TC	TD	TC + TD	TC+TD as % of base import from: Partner	World	TD as % of import from rest of the world
	---------- million $ ----------			%	%	%
China and India						
TC and TD for India in China	356	306	662	62	4.5	2.4
TC and TD for China in India	116	40	157	53	2.6	0.7
India and AFTA						
TC and TD for AFTA in India	1300	199	1499	69	21.7	4.2
TC and TD for India in AFTA	54	41	96	9	0.4	0.2
AFTA and China						
TC and TD for China in AFTA	276	182	458	21	1.6	0.8
TC and TD for AFTA in China	864	111	975	20	4.1	0.8

Source: Author, based on COMTRADE and TRAINS data (through WITS), and the method discussed in the text.

Additional trade created following the PTA is extremely concentrated, with cotton alone amounting to 94 percent of the total. Next in importance is oil meal (HS23) but with only 3 percent share of the total, followed by vegetable fats and oils (HS1515) with 2 percent share. This means that the rest of the 82 tariff lines at the HS4 level make up the remaining 2 percent of the total TC and TD, i.e. for most other products, both TC and TD are negligible.

A China-India PTA diverts away from rest of the world only 0.8 percent of China's base period total import, or US$306 million. Of this, 96 percent is due to cotton. However, this is a very small (0.7 percent) share of China's aggregate import of cotton from rest of the world which was US$4 billion in 2006. For the rest of the other tariff lines, there is hardly any TD, reflecting both the base period bilateral trade pattern and China's relatively low tariffs.

TC and TD for China in India: At $157 million, additional trade opportunity for China in the Indian market is about one-fourth of that for India in China. Of this total, about 74 percent is TC and the rest is TD. Yet, this total amounts to 53 percent of India's base period import from China because the total value of bilateral trade is fairly low. For India, this additional trade is 3.7 percent of its total global import.

Only three products make up 66 percent of the total TC+TD. Raw silk alone accounts for 33 percent of the total. Although India's tariff on raw silk is relatively low (30 percent), silk carries a weight of 48 percent in India's total import from China. Moreover, as almost all of India's import of silk is from China, there is hardly any TD. The other two products each with 15-16 percent weight in total TC+TD are ethyl alcohol (HS2207) and dried leguminous vegetables (HS0713). For the former, the primary reason for the relatively large TC+TD is high Indian tariff (182 percent), as import weight in the base period (8 percent) is not that large. For HS0713, tariff is 30 percent but import weight is 14 percent. Some other products that are prominent in this sense are apples, wool and tea. The rest of the traded products are not significant for TC and TD because of very small import values and despite high tariffs on many of them.

FTA between India and AFTA

TC and TD for AFTA in India: An India-AFTA PTA will create $1,499 million of additional trade for AFTA in India. This is equivalent to 70 percent of the base period import of India from AFTA. This additional trade is also substantive from the standpoint of India, amounting to 22 percent of India's global import. This is in sharp contrast to the other five cases analysed here in that in none of these cases TC+TD exceeded 5 percent of the global import.

Some 62 percent of the additional trade is for palm oil (HS1511). This follows from the very high share of palm oil (56 percent) in India's import basket from AFTA in the base period as well as high tariff on palm oil (100 percent). The next important product is beans and peas (HS0713) which accounted for 18 percent of the TC+TD. Other notable products in this sense are coconuts, coconut oil, coffee, pepper and tea, but their values of TC+TD are very small relatively.

With a TC of US$1 300 and TD of US$199, this is also one of the six cases analysed where TD is relatively very low. This is mostly explained by the case of palm oil. While TC is very high for the above reason, there was little TD because almost all of India's import of palm oil came from AFTA, and thus there was very little trade to divert from rest of the world. In contrast, for example, TD is relatively high for beans and peas (HS0713) because 50 percent of India's import of beans came from rest of the world.

TC and TD for India in AFTA: Although AFTA's import from India in the base period is not that low in an absolute sense (US$1 068 million), AFTA's import tariffs are much lower. As a result, an India-AFTA PTA creates only US$96 million of additional trade for India in AFTA. Of the total, TC is US$54 million and TD is US$41 million. The total amounts to 9 percent of AFTA's base period import from India, but only 0.4 percent of its total import from the world. The size of the trade diverted from rest of the world is also very small due to AFTA's low tariffs.

Five categories of products account for over 65 percent of the additional trade for India. These are: bovine meat 20 percent; tobacco 15 percent; oil meal 13 percent; oilseeds 9 percent; and rice 7 percent.

FTA between AFTA and China

TC and TD for AFTA in China: An AFTA-China FTA will create additional trade for AFTA in the Chinese market of US$975 million, US$864 million of which is TC and US$111 million is TD. The total amounts to 20 percent of China's base period import from AFTA, and 4.1 percent of China's global import.

Reflecting the base period import levels, and tariff rates to a lesser extent, bulk of the additional trade is on 3-4 products: palm oil, rice, fruits, cassava and sugar. Vegetable oils (mostly palm oil) amount to 36 percent of the total TC+TD, followed by rice at 18 percent. Fresh fruits account for an additional 9 percent, dominated by bananas, melons and papaws, dried fruits and "other fresh fruits" (HS0810). Cassava makes up another 8 percent of the total and sugar 7.4 percent. Additional trade generated for other products is very low. Notably, there is hardly any new trade for such higher-valued, processed goods like meat and dairy products (e.g. in HS02 and HS04 chapters) and preparations of meat, vegetables and fruits (e.g. in HS16-19 chapters). In the model used here, this obviously follows from the fact that there is not much trade in these products in the base period, which is nevertheless consistent with the general understanding that China itself is relatively competitive in producing and exporting these processed products.

The value of TD is fairly low on the whole, at only 0.8 percent of base import from rest of the world, and has to do with China's fairly low tariffs. Only 3-4 products show somewhat marked values of TD, notably honey, cut flowers and meat.

TC and TD for China in AFTA: The value of TC+TD for China in AFTA is US$458 million, of which TC is US$276 million and TD is US$182 million. The total amounts to 21 percent of AFTA's base period import from China, but only 1.6 percent of AFTA's global import. As above, TD from rest of the world is very low on the whole (0.8 percent).

Three types of products account for almost 70 percent of the total additional trade: fresh vegetables, fresh fruits, and processed food products (HS16 and HS19-21). Among vegetables, garlic and onions (HS0703), dried vegetables (HS0712) and carrots etc. (HS0706) are prominent. Among fruits, almost 80 percent is accounted by apples and pears (HS0808) and citrus (HS0805). In the third category, there are several processed foods (meats, cereals and vegetables).

IV. SUMMARY

The rush to regionalism in Asia began somewhat later than in other regions but is accelerating now. Going by the current trends, most countries of this region will also have multiple and overlapping preferential trade areas (PTAs). With the new Asian drivers – China and India – engaged in the process of forming a PTA between them, and PTAs with the large ASEAN block, much of the Asian trade and investment could be taking place within the framework of preferential trade. It is therefore not surprising that there has been a proliferation of studies on Asian regionalism. Besides the analysis of the impact on these countries themselves, many of these studies are on the likely implications for other countries in Asia as well as in other regions. Given that these are either very new PTAs or are being negotiated, only *ex ante* analysis is possible at this stage.

The purpose of this paper is to understand better agricultural trade opportunities and challenges following the formation of bilateral PTAs among China, India and ASEAN's AFTA. Accordingly, the paper first reviewed the evolution of bilateral agricultural trade among these three blocks, covering the period of 2000 to 2006. Following this, two pieces of analyses were undertaken to address the topic of opportunities and challenges. One was the review of trade complementarity among the three blocks. The other was the computation of the Vinerian trade creation and trade diversion outcomes assuming that free trade agreements (FTAs) among the three blocks are fully implemented.

The following summarizes the key observations.

The data show that agricultural trade is somewhat surprisingly a fairly small share of the total trade for all three blocks. Moreover, as non-agricultural trade is increasing rapidly, this share is shrinking further. For 2004-06, the share was about 5-6 percent for AFTA and India, and just over 3 percent for China. This small share, however, does not mean that agriculture has not been an issue in forging trade agreements. Indeed, the opposite has been the experience, with agricultural sensitivity complicating or delaying trade agreements among the three blocks. Agriculture is still critical for poverty reduction, notably in India and China, as well as in several ASEAN countries.

The data also showed that China, India and AFTA trade rather heavily with outside this block, the exception being AFTA due to its large intra-AFTA trade. In 2003-05, only about 14 percent of China's agricultural trade was with AFTA and India combined. In the case of India, while bulk of its exports (about 80 percent) is destined to countries other than China and ASEAN, 44 percent of India's import was sourced from AFTA and China combined. Palm oil import from AFTA is a major factor here.

The review of bilateral agricultural trade data among the three blocks, separately for imports and exports, showed divergent trends. In some cases, agricultural trade has expanded markedly and steadily, and in other cases fluctuated around a rising trend. In several cases, these trends were heavily influenced by 1-2 products, indicating lack of diversification and thus a weak basis for sustained growth in the overall trade.

Thus, for example, India's imports from AFTA doubled from over US$1 billion in 2000 to US$2 billion in 2006, but with marked ups and downs. As palm oil alone accounted for as much as 80 percent of the total import in four of the seven years, these fluctuations are explained mostly by trends in palm oil import. Despite this, imports of other products have also increased considerably, from US$140 million in 2000 to US$730 million in 2006. Thus, the overall trend is promising. Palm oil also dominates China's import basket from AFTA (on average about 60 percent of the total), trade in other products has also increased by four times from US$500 million in 2000 to almost US$2 billion in 2006. Likewise, China's phenomenal growth in imports from India after 2003 is also largely explained by one product – cotton. China's import of cotton from India increased by US$80 million in 2005 and by US$614 million in 2006 alone, but in the mean time, trade in some other products like oil meals and vegetables is also picking up.

One exception to this general pattern, i.e. the domination of 1-2 products in total agricultural trade, is AFTA's imports from China, which are much diversified.

The potentials for trade among the three partners were analysed using trade complementarity indices. The results are mixed. The values of the trade complementarity index (TCI), computed with trade data at the HS-4 level, ranged between 26 and 41 (with one exception, only 13 for

India's imports and China's exports). These are not low values when compared with TCIs for other PTAs from other regions, notably among developing countries located in the same region and with similar levels of development. On the downside, these TCIs are found to be strongly influenced by trade in 2-3 products, such as palm oil, cotton, oil meals and raw silk. Viewed from this standpoint, AFTA's imports show high and robust complementarity with exports of both China and India, but not as much for trade in the reverse direction. Trade complementarity among countries typically improves only gradually. The existence of trade and economic cooperation agreement helps this process immensely as countries develop trade relations in a wide range of areas and remove non-tariff barriers. There are immense trading opportunities among the three blocks in processed agricultural products (e.g. in HS chapters 16-21) which should develop relatively rapidly once trade and economic cooperation agreements deepen.

The impact of a PTA on partners and non-partners is typically analysed by quantifying the Vinerian trade creation (TC) and trade diversion (TD). In this framework, new additional trade for a partner is the sum of TC and TD. The TD also measures the extent to which trade is diverted away from non-partners, or rest of the world. The results for AFTA, China and India show that additional trade for a partner, following a fully implemented FTA, is substantive in three of the six cases covered, namely for India in China, for China in India, and for AFTA in India. In two other cases, for China in AFTA and for AFTA in China, additional trade generated is moderate (about 20 percent of the base period trade) and in only one case – for India in AFTA – it is very low (9 percent of base trade). These differences are due to the size of imports from the partner in the base period and import tariffs. Assumed values of the elasticity parameters (import demand and substitution) also influence the absolute values of the TC and TD, but not the relative values across the six cases because the same parameter values are used for all products and FTAs.

As a proportion of a country or block's total global import, the sum of the TC and TD is relatively small, less than 5 percent, with one exception of 22 percent for AFTA in the Indian market. Palm oil is a major reason here, due to both large weight in India's import basket and India's high tariff in the base period.

Lastly on the TC and TD, the analysis shows that the FTAs are generally less trade diverting in the AFTA and China markets primarily because their import tariffs are much lower in the base period, than is case for India. This follows from the formula of the TD. Notwithstanding the usual limitations of the TC and TD measures, the added value of this type of analysis lies on the identification of products or sub-sectors with large, or small, trade creation and diversion, which is an useful information for trade negotiations as well as for targeting trade adjustment measures.

In conclusion, it is important to recognize some limitations in projecting potentials for trade based upon historical trends, as the TCI and TC/TD measures do. One is the difficulty in extrapolating recent trends to the future when trade is growing rapidly, as is the case for Asia generally, and with China in particular. For example, the values of TC and TD would vary considerably whether one uses 2005 or 2006, or an average, for China's imports from India, and for particular products like cotton. The other uncertainty is projecting trade in products that are not traded in the base period. In 2006 for example, there were only 87 agricultural tariff lines at the HS-4 level (out of about 200) for which there was some import by China from India, i.e. there was no trade for the other 113 or so tariff lines. Recent years have seen the growth of not only total trade but also the number of products traded, but how this will evolve further is nearly impossible to model.

Based on experiences from older PTAs from other regions, the existence or not of a formal trade agreement seems to matter greatly for the growth of trade and its diversity, since a formal PTA creates synergies that facilitate trade, far beyond the levels observed prior to the PTA. Thus, although the decision to form a PTA between countries like India and China might be influenced by progress made in negotiations on sectors like industry and services, a formal trade agreement will have marked positive impact on agriculture also, and not just on the quantum of trade but also in its richness in terms of diversification to higher value-added products.

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