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India's export competitiveness of agricultural products with asean

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Abstract: *The paper attempts to assess India's trade intensity as well as Revealed Comparative Advantage (RCA) for agriculture sector with respect to ASEAN (Association of South- East Nation) at the aggregate and disaggregate level. The study assesses the structure of comparative advantage over 2001 to 2013. ITC (International Trade centre) data available under public domain is used to accomplish the study. HS classification is used to calculate the Trade Intensity (TI) index and RCA index. The study has found that India's Export intensity in total agriculture trade has been increasing with respect to ASEAN than rest of the world. While in terms of Import Intensity, declining trend has been observed over the study period. It has also been found that comparative advantage is decreasing gradually throughout the study period, although the pattern of India's comparative advantage in export of agricultural products with ASEAN varies from one commodity to another commodity. The study suggests to direct the policy initiate to promote the products, having comparative advantage in exports. It will also help to producers and exporters to select appropriate commodity for trading, which have comparative advantage. Effect should be focused on promotion of exports like Meat, Vegetables and Fruits, Tea, Rice and Cereal products for Indian exporters in ASEAN market*.

Keywords: Trade Intensity, Revealed Comparative Advantage, Export competitiveness.

1. INTRODUCTION

International trade has undergone a rapid transformation across the world after the establishment of World Trade Organization (WTO) and subsequent liberalization in trade barriers. After economic reform in 90s and the ratification of the Agreement on Agriculture (AoA) with WTO, it had a major impact leading to redefining its agriculture trade on international platform as well as in India also. In the recent past, Indian agriculture trade on various commodities has occupied an important place in the world agriculture trade. Today, India is a major supplier of several agricultural commodities such as rice tea, coffee, spices, fresh fruits, fresh vegetables, meat products and marine products in to the international market. However, the country faces major challenges and competition within the Asian countries for various Indian agriculture products in the international market, although policies related to international trade making it somewhat easy to compete on international platform and mainly with Asian countries.

On the basis of prevailing reality of comparative advantage of a country or region, it facilitates economic integration in the world trade. Historically, trade policy of a nation or region is based on output value that is drawn on the theory of comparative advantage.

However, to explain the current circumstances of international trade, the relevance of the theory is poising question. Even though, the theory of comparative advantage has been remained of great importance within the domain of international trade after Second World War. Basically, this theory is based on available domestic natural resources. At present, significant improvement on information & communication technology is affecting the mobilization of factors of production and productivity across countries and trade pattern of world trade as well (Kowalski, 2011). Ricardo (1817) emphasized on physical and natural resource, but many post-Ricardo economists have put more emphasis on technological and human factors of production.

Within the domain of international trade, the proliferation of regionalization is getting intensified due to limited progress on multilateral trade negotiations under the WTO. In the recent past, India is making demanding attempt to integrate it with the world economy through regional engagement. One among them is signing Regional Trade Agreement (RTA) with a regional block, with ASEAN on 13th August 2009 for the first time. In the policy circle, ASEAN-India Free Trade Agreement (AIFTA) has generated intense discussion on economic impact of India's trade in goods. Amongst the several commodities moving across India-ASEAN borders, agricultural commodities acclaim an irrefutable importance because the large number of people's livelihood is still depends upon agriculture in India. Agriculture trade with Southeast Asia is a major pillar of India's external trade policy. In the context to understand the comparative advantage of India on agricultural products is importance to prove a better picture in the domain of ASIAN-India trade framework. Therefore, the present study is designed to make modest attempt to analyse the competitiveness of India's agricultural trade with the ASEAN members' countries in the last one decade.

This paper is organised in six sections: next section gives a brief review theoretical as well as empirical of literature, section three presents two ways trade flows between India and ASEAN, section four discusses the data and methodology used for analyses of comparative advantage, section five presents the results of the study and finally section six brings together summary and conclusions of this study.

2. REVIEW OF LITERATURE

This section is divided into two parts, first is theoretical review of literature and second empirical review of literature.

2.1 Theoretical Studies

In the international trade literature, there are two prominent theories exist and these are based on comparative advantage; the Ricardian theory and Heckscher and Ohlin (H-O) theory. Ricardo (1817) stated that absolute production cost difference rather than comparative cost difference is the reason for international trade. Instead, the H-O theory stated that difference in factor price across the countries is the reason for international trade.

The validity of the H-O theory has been examined and is presented as Leontief paradox. Leontief used U.S. data for the year 1947 for his study. Since U. S. was then the most capital abundant nation in the world, Leontief expected that it exported capital intensive commodities and imported labour intensive commodities. He found the contrary of what he was expected.

In brief, the comparative advantage in classical trade theories is determined by pre-trade relative prices. In autarky, a country has comparative advantage in particular good, if relative price of domestic goods is below its relative price in the world market. These pre-trade relative prices depend on relative cost of production. Traditional measures of comparative advantage are based on the comparison of pre-trade relative costs. However, due to the absence of observable data on relative prices and/ or costs, to fill this gap, Balassa (1965), has introduced an alternative approach to calculate comparative advantage, it is called Revealed Comparative Advantage (RCA) index.

2.2 Empirical Studies

This section provides a brief overview of selected studies done using RCAs index to evaluate competitiveness of agriculture in international trade literature.

Among the empirical studies, Balassa's (1965) study was first to arrive Revealed Comparative Advantage (RCA) index. It had been undergone changes several times such as, Balassa (1977, 1979 and 1986). He used post-trade data to calculate RCA index. The Balassa index did not determine the sources of comparative advantage rather it tried to identify a country has revealed comparative advantage or not. The formula he defined, as a commodity share in total national export divided by its share in total world export. The RCA value of a commodity is greater than one indicate that a particular commodity has comparative advantage in export to world. If the value is less than one it indicate that comparative disadvantage in exporting that commodity to world. RCA has been widely used to analyse the changes in trading pattern (Ferto and Hubbard 2003, Batra and Khan 2005, Kannan 2010).

Ferto and Hubbard (2002) study used modifications of the RCA index was developed by Vollrath (1991) namely, the *Relative Trade Advantage*, the *logarithm of the Relative*

Export Advantage and *Revealed Competitiveness*. They Used data at 4-digit level of Standard International trade classification (SITC) classification for the period of 1992 to 1998 for agro-based products. In fact, they explore the competitiveness of Hungarian agriculture with the EU as its competitor; they found that in spite of changes in the agriculture scene of Hungary; the pattern of revealed comparative advantage had been remained stable.

Another study is done by Widgren (2005) on the comparative advantage of a sample of Asian, American and European countries from 1996 to 2002. His study mainly used the data at Harmonized System (HS) classification at the 4-digit level. He studied the source of comparative advantage and came on the following conclusion. In the context of Asian continent the factor content of comparative advantage had some similarity. While in case for the US was based on highly skilled labour and for the EU, they had moved towards use of human as well as physical capital.

A study by Batra and Khan (2005) assessed the RCA index at the 2 as well as 6-digit level of HS classification to compare India's comparative advantage with that of China. The study mainly focused on the changes in the structure of comparative advantage in the latter period (2002-2003). The authors also examined comparative advantage of the two countries according to factor intensity using the SITC. The study does not find any structural changes in the comparative advantage on both the countries, except for some sectors within manufacturing. Further, Burange & Chaddha (2008) evaluated the structure of comparative advantage in India and the change in the scene over a period of 1996 to 2005. They have used the data as per the HS classification to compute the RCA index. The index is constructed at various levels of aggregation for the export as well as for import. Their study found that, India has comparative advantage in the exports of labour-intensive items like textiles and scale-intensive as well as in chemicals and iron industry also.

Similar study done by Shoufeng, et.al.(2011) analyzing the export competitiveness of agricultural products between China and Central Asian Countries by using revealed comparative advantage index and trade competitiveness index, and comes to the following conclusions: (1) China's total agriculture products do not have comparative advantage, while Central Asian Countries have changed from comparative advantage into comparative disadvantage; (2)The total agri-products of both China and Central Asian Countries have changed from trade competitive advantage into trade competitive disadvantage; (3) China and Central Asian Countries, on specific categories of agricultural products, have different

advantage structures, which presents vast bilateral trade potential on the basis of comparative advantage.

Another study by Sarath Chandran (2010) used Trade Intensity Index (TII) and Revealed Comparative Advantage (RCA) Index to see the trade complementarily and similarity between India and ASEAN countries. His study revealed that there are some sectors and products, where the complementary are available for both the trading partners to enhance trade cooperation. While, their study showed that India has advantages to export of food grains to small and less-developing countries of ASEAN and India can import edible oil and other agriculture products from other ASEAN countries. India enjoys comparative advantages in minerals, chemicals, iron and steel, gems and jewellery industry etc. in contrast ASEAN has comparative advantage in Electrical and Electronic components and India can import these. In brief, in the proliferation of regionalization era all over the globe, the emerging economies structure warrants greater cooperation from India and vice-versa.

Further the study done by Shinoj and Mathur (2008), using the Revealed Symmetric Comparative Advantage (RSCA), to find out India's comparative advantage in agricultural export vis-a-vis Asia. They found that, India's comparative advantage in most of the important agricultural exports has been eroding and losing out to other Asian competitors during the post reform period.

Andrew Maule (1996) studied the trade complementarity of Thailand with other ASEAN countries. He used the data for the years 1991 and 1992 at the four digit SITC level and calculated the RCAX (Export) and RCAM (Import) to find out trade complementarity between trade partners. The study found that trade complementarity is high between Thailand and other developed nation than between Thailand and other ASEAN neighbour. Further study shows that the difference in trade Complementarity, a real danger of AFTA (ASEAN Free Trade Agreement) lies in the possibilities of trade diversion resulting from its formation.

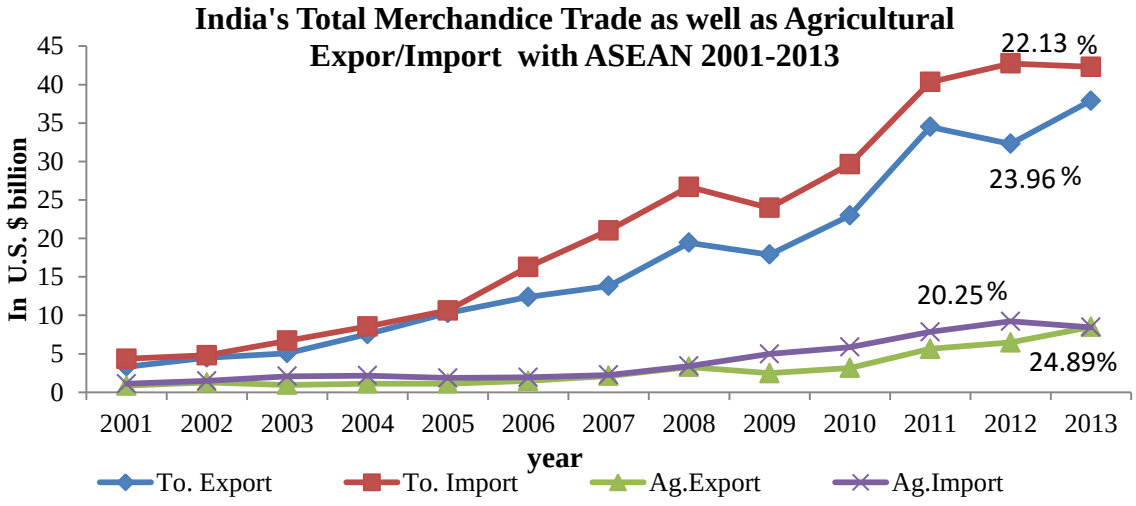
Andhale and Kannan (2015) estimated India's revealed comparative advantage in Agro-processed products with rest of the world. The study followed the commodity aggregation by WITS (World Integration Trade Solution) for the period of 2003 to 2013. The authors found that India has comparative advantage to export in seven out of 44 processed animal products, 12 out of 40 processed vegetable products and seven out of 44 processed food products. Further they used the consistency test for four indices of revealed comparative advantage. It was reported that the ordinal measure is relatively consistent than cardinal measures.

In nutshell, we did not come across any important study that focuses on agriculture trade competitiveness using Trade Intensity Index and Revealed Symmetric Comparative Index to find out if Indian agriculture sector as competitive or not under the ASEAN- India FTA. Hence, study demands in the said context and this study is one step forward in this regard.

3. INDIA'S TRADE PROFILE WITH ASEAN VIS-A VIS ASEAN WITH INDIA

Theoretically, the value of export between two countries (like country A to country B) should be the same as the value of imports between those two countries (same as country B from country A). However, this may not be true in reality, because there is often mismatch between the two due to the fact that, the exports are recorded FOB (free on board) while imports are recorded under CIF (cost insurance and fright) (Joshi,2012). Hence, we have given separately India's exports and Imports to & from ASEAN vice-versa. Trade profile gives a clear picture of about how India and ASEAN countries are integrating closer to each other over the last decade. The broad picture of total merchandise and total agriculture trade between India and ASEAN during 2001-2013 is given in figure 1 and2.

Figure1. India's Trade with ASEAN

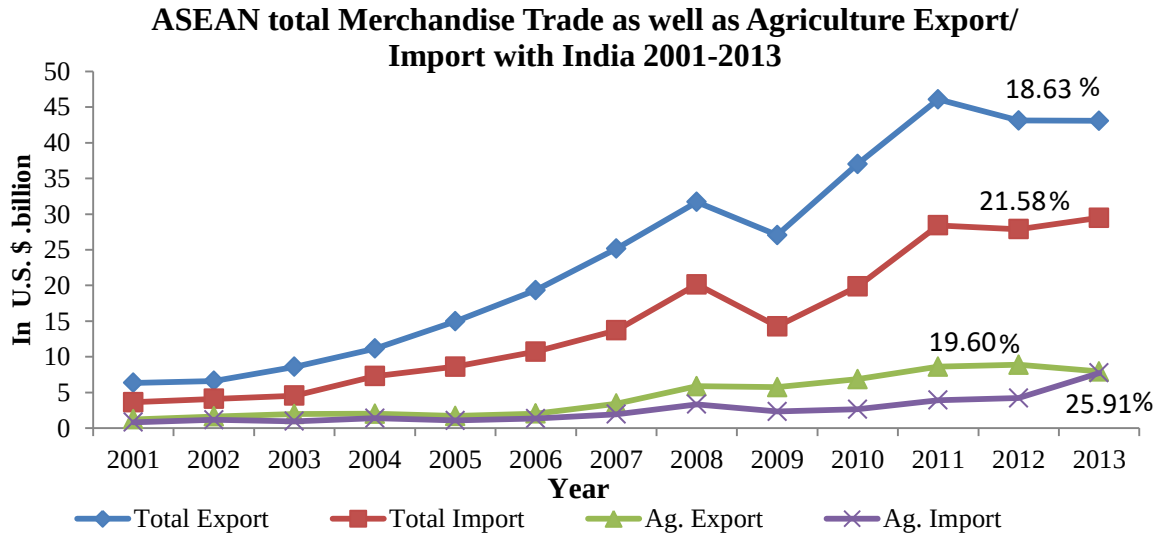


Source: International Trade Centre (ITC).

We can see from figure 1 that India's total merchandise as well agriculture trade with ASEAN countries. The total merchandise trade grew at an annual rate of 23 per cent from US $ 7.66 billion in 2001 to US $ 80.19 billion in 2013. Over the same period both exports (23.96 %) and imports (22.13 %) have grown in double digit percentage during the 2001 to 2013 (figure 1). These represented about 11 per cent of total Indian exports and nearly 9 per cent of total imports in 2013. However, India's imports from ASEAN have been growing faster than its exports to ASEAN in absolute terms. The trade gap is always negative and

volatile in nature during the study period. It was US $ -1.03 billion in 2001, it reached to US $ -10.44 billion in 2010, again fall down US $ - 4.42 billion in 2013. Imports out-valued exports throughout this period and hence the trade balance has been in favour of the ASEAN. On the other hand, it has been found that the total agriculture trade has been increasing at an annual rate of 21 per cent and it increased from US $ 1.95 billion to US $16.94 billion during 2001-2013. India's agriculture exports to ASEAN have been increasing at an annual rate of 24.89 per cent, from US $ 0.85 billion to US $ 8.49 billion during 2001-2013. The import grew at an annual rate of 20.25 per cent, from US $ 1.11 billion to US $ 8.45 billion (figure 1). These represented about 20 per cent of total Indian agriculture exports and nearly 49 per cent of total agriculture imports in 2013. The agriculture exports are growing faster than agriculture imports to and from ASEAN in terms of percentage. The agriculture trade balance has also been in favour of ASEAN over the study period except 2013. One important aspect is that agriculture trade balance was negative and increased up to 2010 and after that it started decline and turns into positive in 2013. In sum, India's total trades including agriculture with ASEAN countries are increasing over the last decade. So, India has a potential to increase its agriculture as well as other trade with ASEAN countries.

Figure 2. ASEAN Trade with India



Source: International Trade Centre (ITC).

Further, it can be observed very clearly that, the total merchandise trade of ASEAN with India has been growing at an annual rate of 20 per cent, from US $ 9.98 billion to $ 72.53 billion during the study period. Both exports (18.63 %) and imports (21.58 %) have grown in double digit percentage during 2001 to 2013 (figure 2). These represented about 3.37 per cent

of total ASEAN exports and 2.33 per cent of total ASEAN imports in 2013. Hence, ASEAN's exports are increasing more than its import with India. The total trade balance is in favour of ASEAN over this period.

On the other hand, the total agriculture trade of ASEAN with India is increasing at an annual rate of 21 per cent per annum and it increased from US $ 2.05 billion in 2001 to US $ 15.66 billion in 2013. The ASEAN agriculture exports are growing at an annual rate of 19.60 per cent, from US $ 1.23 billion in 2001 to US $ 7.93 billion in 2013. The imports are growing at an annual rate of 25.91 per cent, from US $ 0.82 billion in 2001 to US $ 7.73 billion in 2013 (figure 2). These represented 8.72 per cent of total ASEAN agricultural exports and 7.50 per cent of total agricultural imports in 2013. However, agriculture trade balance has also been in favour of ASEAN over the period. It was US $0.40 billion in 2001; it touched to US $4.67 in 2011 and fall down to US $ 0.20 billion in 2013. Overall we can say, over the last decade India's trade balance of total merchandise as well as agriculture trade has been in favour of ASEAN. Despite of the fact, India's total merchandise trade including agriculture with ASEAN countries are growing in terms of annual growth rate, faster than ASEAN trade with India over the reference period from 2001 to 2013.

4. METHODOLOGY

The study is based on export and import data as per the Harmonized System (HS 2007) classification. The entire data sourced from International Trade Centre (ITC) and covers 13-years period from 2001 to 2013. For any RTA to be successful, it is important to have complementary trade structure between partners for mutual benefit. Countries are having complementary trade structure are likely to trade more where as countries with similar trade structure will often struggle to improve trade share unless there is substantial intra industry trade (Chandran, 2010). We used Trade Intensity (TI) Index and modified Revealed Comparative Advantage (RCA) Index to see the competitiveness of agricultural products between India and ASEAN countries. These are the important tools in international trade to study the competitiveness of participating country and hence reveal the possibility of increased trade cooperation between them. For this analysis we defined agriculture sector based on Uruguay Round of Agreement on Agriculture (URAoA) and the HS classification. We consider only chapter (HS) 01-24 Trade for this analysis.

The bilateral trade intensity index for total trade is as follows:

$$\mathbf{Tij = [(Xij+Mij)/(Xi+Mi)]/\{[Xwj+Mwj)-(Xij+Mij)]/[(Xw+Mw)-(Xi+Mi)]\}} \quad [1]$$

Where,

Tij = Total trade intensity index of country i (India) with country j (ASEAN);

Xij = Exports of country i to j;

Mij = Imports of country i from j;

Xi =Total exports of country i;

Mi= Total imports of country i;

Xwj= Total world exports to country j;

Mwj = Total world imports from country j; and

Xw = Total world exports; Mw = Total world imports.

This index is interpreted as a relative measure of the two basic ratios. If the value of Tij > 1, it implies that the bilateral trade intensity for country i with country j is greater than in comparison to country i's trade with the rest of the world (ROW). For instance, if India is consider as country i and country j is represented by its trading partners, viz, ASEAN, then a value of Tij > 1 implies that India prefers to trade more intensely with ASEAN than trading with the ROW. Trade Intensity Index is further divide in to Export Intensity Index (EII) and Import Intensity Index (III) for looking the pattern of intensity in agricultural exports and imports.

EII between India and ASEAN = [Xij / Xi] / {[Mj – Mji] /[Mw – Mi]} [2]

EII= Export Intensity Index

M_j = Total imports of country j and

M_{ji} = Imports of country j from country i.

A value of this index above unity implies that country i's relative share of exports to country j exceeds country j's share of imports from the ROW.

III between India and ASEAN = [Mij / Mi] / {[Xj-Xji] / [Xw- Xi]} [3]

III = Import Intensity Index

Xj= Total export of country j and

Xji = Export of country j to country i.

A value of this index above unity implies that country i's relative share of imports to country 'j' exceeds country j's share of exports from the ROW (Asher and Sen, 2005).

Moving further, the RCA index is calculated at the aggregate level as well as disaggregates level. First we calculated RCA index for total agriculture sector and clubbed under the four major categories on basis of Harmonized System (HS 2007) to understand the sectoral competitiveness over the study period.

Table 1: Details of the Sectors included under the analysis

Sl No	Details	Code
1.	Live Animal	HS 01-05
2.	Vegetable products	HS 06-14
3.	Animal or vegetable fats products	HS 15
4.	Prepared foodstuffs products	HS 16-24

Source: Author's aggregations based on ITC database.

For disaggregated level analysis, ten major agricultural commodities /commodity group were selected for the analysis, based on their respective shares in India's total agricultural exports. They are Marine products, Milk products, Meat products, Vegetables products and Edible fruits, Rice, Cereals, Coffee, Tea and Spices. During the period under study (2001-2013), these commodities together accounted for more than 65 per cent of India's total agricultural export earnings from the world.

To examine the export competitiveness of Agricultural products between India and ASEAN countries, we used Revealed Comparative Advantage (RCA) index. To capture the degree of trade specialization of one country, Balassa (1965) introduced the Revealed Comparative Advantage (RCA) index. It shows how a product is competitive in countries' exports compared to the products share in another country or group of countries. A product with high RCA is competitive and can be exported to countries with low RCA. Countries with similar RCA profile are likely to have high bilateral trade intensities unless intra-industry trade is involved (Chandran, 2010). Under the assumption that the commodity pattern of trade reflects the inter-country differences in relative costs as well as non-price factors, the index is assumed to "reveal the comparative advantage of the trading countries (Shinoj & Mathur, 2008). The advantage of using the RCA index is that it considers the intrinsic advantage of a particular export commodity and is consistent with the changes in an economy's relative factor endowments and productivity. The disadvantage, however, is that it cannot distinguish improvements in factor endowments and pursuit of appropriate trade policies by a country (Batra & Khan, 2005).The original index of RCA was first formulated by Balassa (1965) and can be written as follows.

$$\mathbf{RCA_1} = \mathbf{(X_{ij} / X_{it}) / (X_{nj} / X_{nt})} \quad [4]$$

Where,

X_{ij} = i^{th} country's exports of commodity j

X_{it} = i^{th} country's total exports (all merchandise).

X_{nj} = n^{th} set of countries export of commodity j.

X_{nt} = n^{th} set of countries total exports (all merchandise)

In the present study, country 'i' refers to India , commodity 'j' refers to any of the selected agriculture commodity and set of countries 'n' refers to the members of ASEAN .

We have slightly modified the above said formula as follows,

$$\mathbf{RCA}_{2} = (X_{ij} / X_{iAg}) / (X_{nj} / X_{nAg}) \quad [5]$$

Where,

X_{ij} = 'i' (India's) exports of agricultural products (Ag) j.

X_{iAg} = 'i' (India's) exports of total agricultural products (Ag).

X_{nj} = 'n^{th}' (ASEAN) exports of agricultural products j.

X_{nAg} = n^{th} (ASEAN) exports of total agricultural products (Ag).

The RCA index value ranges between zero (0) and positive infinitive (+∞). If the RCA index value of a country is greater than one, the country has comparative advantage in those products, vice versa.

However, RCA suffers from the problem of asymmetry as 'pure' RCA is basically not comparable on both sides of unity, as the index ranges from zero to one, if a country is said not to be specialized in a given commodity, while the value of the index ranges from one to infinity, if a country is said to be specialized. Some procedure has been proposed to alleviate the problem of asymmetry, such as the logarithmic transformation of the Balassa measure (Vollarth 1991). But the methodological problem arise when , for ex. ln(RCA) is used as the basis for statistical test- small RCA values are transformed to high negative ln(RCA) values (Dalum et al. 1998). The index is made symmetric, following the methodology suggested by Dalum *et al*. (1998) and the new index is called 'Revealed Symmetric Comparative Advantage' (RSCA). Mathematically, it can be expressed as follows,

$$\mathbf{RSCA = (RCA- 1) / (RCA+1)} \quad [6]$$

The value of RSCA ranges between { – 1} and {+ 1} and is free from the problem of skewness. A commodity is said to have comparative advantage in its exports if the corresponding RSCA value is positive and vice-versa. In the present study, the RSCA was used to look into the comparative advantage of the selected commodities.

5. RESULTS

5.1. Agricultural Trade Intensity between India and ASEAN

It is evident from Table 2 that India's total agricultural export as well as import intensity with ASEAN is above unity for all the years. It reveal from the overall estimate of EII and III that India's agricultural trade are more intense with ASEAN countries compared with ROW. According to natural trading partner theory- that countries trade more with neighbours and

close proximate than distance countries. However, these indices support to the natural trading partner theory that the intensity of India's trade with its neighbours is higher than the ROW. The ASEAN countries are natural trade partners of India in agriculture trade. India's Agricultural EII has marginal increased and III has declined during the study period. India's Import Intensity Index with ASEAN is higher than Export Intensity Index; it means that imports of agriculture goods from ASEAN are more intense than exports of agriculture goods to ASEAN.

Table 2. India' Agricultural Exports and Imports Intensity Index with Respect ASEAN; 2001 to 2013

Years	India's EII with ASEAN	India's III with ASEAN
2001	3.60	6.59
2004	3.74	7.73
2008	4.28	6.00
2013	3.69	6.30

Source: Author's calculations based on ITC Database.

Note: EII- Export Intensity Index. III - Import Intensity Index.

The country wise agricultural export and import intensity of India with ASEAN countries is presented in Table 3. Country wise look of India's export intensity is above one with countries such as Malaysia, Indonesia, Philippines, Singapore Thailand, and Vietnam. Except Thailand and Vietnam the EII has been declined over the years during the study period. For others Brunei, Cambodia is below one up to 2008, after that it turns above one. Lao PDR is one country where the EII is below one for all the years due to the less export going from India. It shows that after singing of AIFTA, the India's agriculture export intensity has increased with less developed countries. India will consider Thailand and Vietnam as the best partner of its export of agricultural commodities in comparison to other ASEAN members (both the countries the value of EII has increased over the study period).

On the other side, India is importing smaller volumes of agricultural commodities from the less developed countries among ASEAN which is reflected in the low import intensity index with Brunei, Cambodia, and Lao PDR. India got very high import intensity with Indonesia (16.97) and Malaysia (7.28) in 2013. Interestingly, India's agriculture trade with ASEAN is heavily tilted towards Indonesia: around 38 per cent India's agriculture trade to ASEAN headed to that country in 2013. India's import intensity was below one with Philippines, Singapore and Thailand for all the years. The import intensity with Vietnam was below one up to 2008 but it turns above one followed that. India will consider in future Indonesia,

Malaysia and Vietnam as the best partner of its import source of agricultural commodities in comparison to other ASEAN members (all the countries the value of III above one) .

Table 3. India's Agricultural Export and Import Intensity Index with ASEAN Countries

Year		BRU[1]	CAM	LAO	MAL	INDO	PHI	SING	THAI	VIET
2001	EII	0.25	0.14	0.41	4.24	5.81	3.29	2.53	2.71	4.26
	III	0.00	0.00	0.00	15.60	14.71	0.28	1.03	0.33	0.47
2004	EII	0.51	0.12	0.01	5.24	4.79	2.50	2.04	2.09	8.12
	III	0.00	0.00	0.19	7.12	28.41	0.25	0.45	0.24	0.89
2008	EII	NA	1.21	0.00	5.51	3.53	2.42	1.48	2.57	14.27
	III	NA	11.51	0.01	2.91	18.48	0.56	0.65	0.51	0.46
2013	EII	1.09	1.48	0.92	3.18	2.63	1.96	1.00	3.08	7.90
	III	0.00	0.02	0.02	7.28	16.97	0.31	0.58	0.79	1.08

Source: Author's calculations based on ITC Database.

Note: Data is not available for Myanmar

The volume of agricultural trade between India and ASEAN is less because strict Rules of Origin and the exclusion of most of the agriculture commodities from tariff concession committed in the AIFT agreement.

5.2 Revealed Comparative Advantage between India and ASEAN

We can see from table 4 that the Revealed Symmetric Comparative Advantage (RSCA) for total agricultural sector of India with respect to ASEAN countries for the period of 2001 to 2013 is fluctuating. India's agricultural sector was found to enjoy comparative advantage with gradual decreasing trend from 2001 to 2008. It shows that India is losing its comparative advantage in exports of agricultural goods to ASEAN markets. The world has gone through very difficult situation-global financial crisis in 2009, which is reflected in RSCA results, it also has bad experienced for Indian agricultural sector. The values of RSCA were negative for the years 2009 to 2011; it means that India had a comparative disadvantage in these years. The inception of AIFTA in 2010 had some positive impact on India's comparative advantage for agricultural export to ASEAN markets. Hence, the position has changed from comparative disadvantage to comparative advantage in the latter years.

Table 4. RSCA Index of Total Agricultural Products

[1] Abbreviations are given in appendix 1 at last.

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
RSCA	0.30	0.25	0.19	0.19	0.15	0.14	0.09	0.04	**-0.10**	**-0.05**	**-0.03**	0.12	0.15

Source: Author's calculations based on ITC Database.

To understand the sector wise comparative advantage of agricultural goods, we divided the agriculture sector into four parts such as Live Animal (HS 01-05), Vegetables Products (HS 06- 14), Animal or Vegetables Fats Products (HS 15) and Prepared Foodstuff Products (HS 16-24) and calculated the RSCA index. The results are presented in the table 5.

Table 5. Sector wise RSCA Index for India with Respect to ASEAN

Year	01-05	06-14	15	16-24
2001	0.00	0.39	-0.71	-0.25
2002	0.06	0.46	-0.83	-0.30
2003	0.08	0.46	-0.83	-0.22
2004	0.08	0.43	-0.77	-0.22
2005	0.15	0.42	-0.78	-0.28
2006	0.11	0.37	-0.81	-0.09
2007	0.12	0.41	-0.84	-0.05
2008	0.11	0.39	-0.85	0.07
2009	0.19	0.39	-0.79	-0.12
2010	0.28	0.37	-0.80	-0.07
2011	0.30	0.40	-0.82	-0.11
2012	0.22	0.46	-0.86	-0.24
2013	0.37	0.43	-0.86	-0.31

Source: Author's calculations based on ITC Database.

Note: 01-05: Live Animal. 06-14: Vegetable Products. 15: Animal 0r Vegetable Products. 16-24: Prepared Foodstuff products.

In case of Live Animal (01-05) sector the value of RSCA index were got positive for all the years. India has 'revealed' comparative advantage with an increasing trend in ASEAN markets. Hence, India has some potential to capture the ASEAN markets for the export of Live Animal products from ROW to ASEAN. In case of Vegetable products (06-14), the value was also found positive with stagnant trend for all the years. It means that India has comparative advantage in ASEAN markets for vegetable export. Hence, India can focus on ASEAN than ROW, to increase the export of live animal and vegetable products.

On the other hand, the 'Animal or Vegetable Fats' (15) products and 'Prepared Foodstuff' (16-24) products, the values are found negative for all the reference years. Hence, India has comparative disadvantage in these two sectors. Basically these two sectors known as value-added industry, it has potential to acquire international market to earn foreign currency. Hence, India should use to AIFTA as a tools to convert its position from comparative

disadvantage to comparative advantage. The Commodity- wise details of the RSCA index results are presented in the next section.

5.2.1 Marine Products

The values of RSCA index for Marine products for India with respect to ASEAN are depicted in Figure 3. The index value was found negative throughout the period under consideration and volatile in nature due to the factors such as slowdown in global consumer demand due to demand has shifted towards less expensive species and stringent Sanitary and phyto-sanitary (SPS) measure. Further low MFN (Most Favoured Nation) base rate in most of the ASEAN countries and the ASEAN nation have included most of the prominent items of India's marine products in exclusion list (Parvathy and Rajasenan, 2012). Further, based on latest FAO (Food and Agriculture Organization) Fish Index, price of fish and fish product weakened in late 2008 and early 2009, reaching their lowest in March 2009. As well as countries like Thailand, China, Indonesia, Vietnam and Philippines are the major competitor to Indian marine products because these countries are producing and supplying huge amount of farmed shrimps in to the international market.

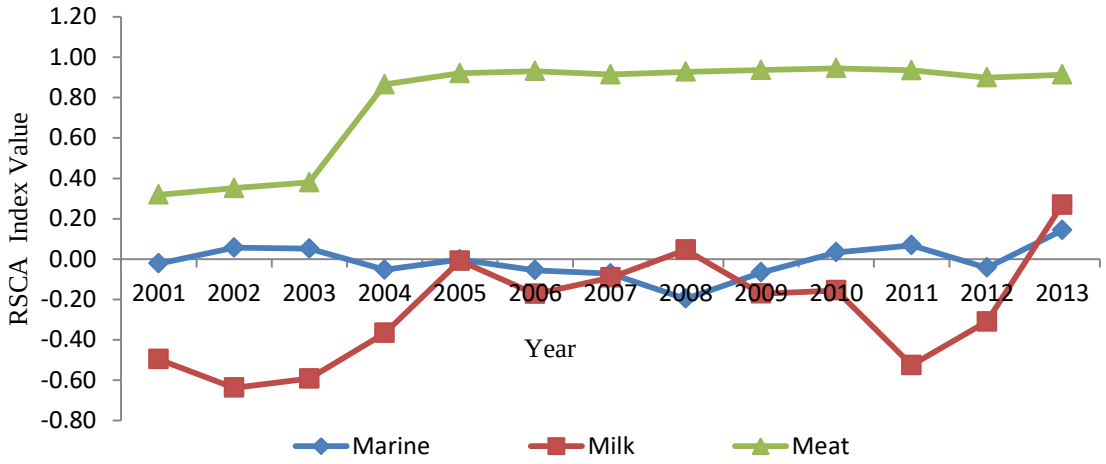
Even though, at the initial period India had comparative disadvantage and it turns in comparative advantage position for short period and again it fall in comparative disadvantage position for long time. The results have wide-reaching implication for India; India may have comparative advantage for marine products in global markets, but not in ASEAN. Hence, the other markets are more suitable for Marine products than ASEAN.

5.2.2 Milk Products

India is currently on first place in milk production in the world. But India did not enjoy any comparative advantage in ASEAN markets. Hence, the ASEAN markets may not be suitable for export of Milk products. So, India has to look for other markets for milk products export also. The computed RSCA values for milk for India with respect to ASEAN were negative throughout the study period except 2013 and indicated 'revealed' comparative disvantage in Milk products exports (figure 3). India's milk products are facing many challenges in ASEAN market such as high tariff and SPS norms. For ex. import has banned in Indonesia due to Foot and Mouth Disease (FMD) prevalent in India. As well as countries like Philippines, Thailand, Indonesia and Malaysia they have kept most of the Indian milk products under the Exclusion List[2] (AIFTA Text.)

[2] Under the exclusion list (EL) members are allowed to retain their base rate, i.e. the MFN applied rates as of 1 July 2007. In other words there is no commitment regarding tariff reduction.

Figure 3. The Trend in RSCA index on Marine, Milk and Meat Products



Source: Author's calculations based on ITC Database.

5.2.3. Meat Products

The Meat has become an essential food all over the world because it contains high protein. In Meat exports, China and U.S are the major competitors to India. The estimated RSCA values for India were positive for all the years and indicated its comparative advantage in Meat exports. The RSCA value increased up to 2004; however it was stagnant for the remaining period (figure 3). Due to the prevalence of stringent Non-tariff barriers (NTB) in ASEAN market like barriers related to process standard. For ex. slaughterhouse should be certified under HACCP[3] policy in Philippines and Malaysia. As well as Singapore and Indonesia has been banned Indian meat import due to the FMD prevalent in India. In 2014 the outgoing government has passed legislation to open Indonesian market to meat imports from FMD affected countries on certain condition. However, despite the fact still India has potential to increase its market share in ASEAN markets using AIFT Agreement as a tool.

5.2.4. Edible Vegetable Products

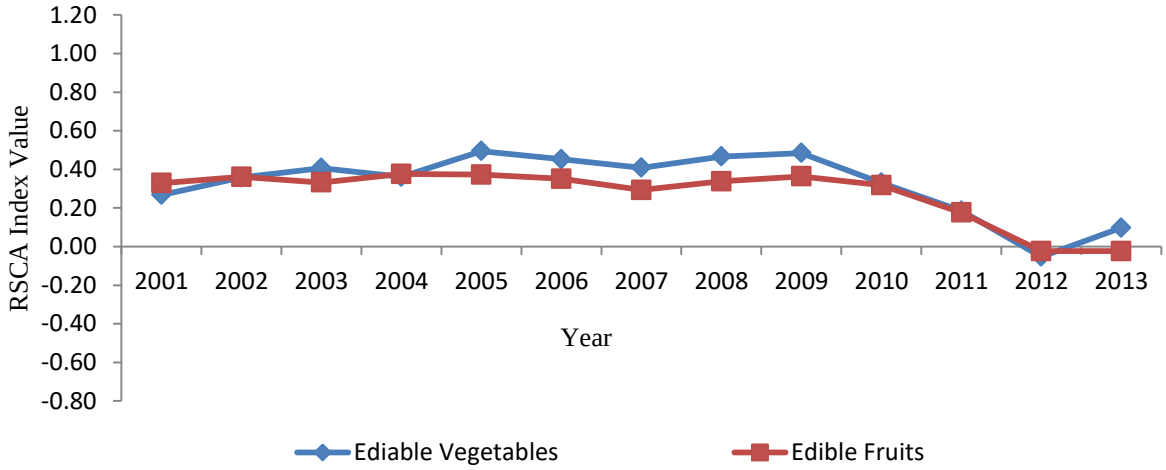
In Vegetable exports also, china is a major competitor to India. India is second largest producer after China in fresh vegetable in the world. It needs high-quality storage facility to store fresh vegetables, India is still lacking behind in it. Hence, efforts are required to create enough infrastructure development to increase storage facilities. The values of RSCA were positive all the years except 2012 (figure 4). For fresh vegetable export India can explore its market opportunity with ASEAN countries.

5.2.5. Edible Fruit Products

[3] The Hazard Analysis and Critical Control points (HACCP) system is a logical, scientific approach to controlling hazards in meat production.

In fruit products also it required good storage facilities to store it. In the Mango and Orange production India is having first and third position in the world. Hence, India has potential to feed fruits to the world. In recent past India is losing its comparative advantage position in ASEAN markets. The values of RSCA were positive up to 2011, means India was having comparative advantage in fruit export to ASEAN and it turns negative in 2012 and 2013 (figure 4). It shows singing of AIFTA (2010) there is no impact on fruit export of India to ASEAN.

Figure 4. The Trend in RSCA index on Edible Vegetables and Edible Fruits Products



Source: Author's calculations based on ITC Database.

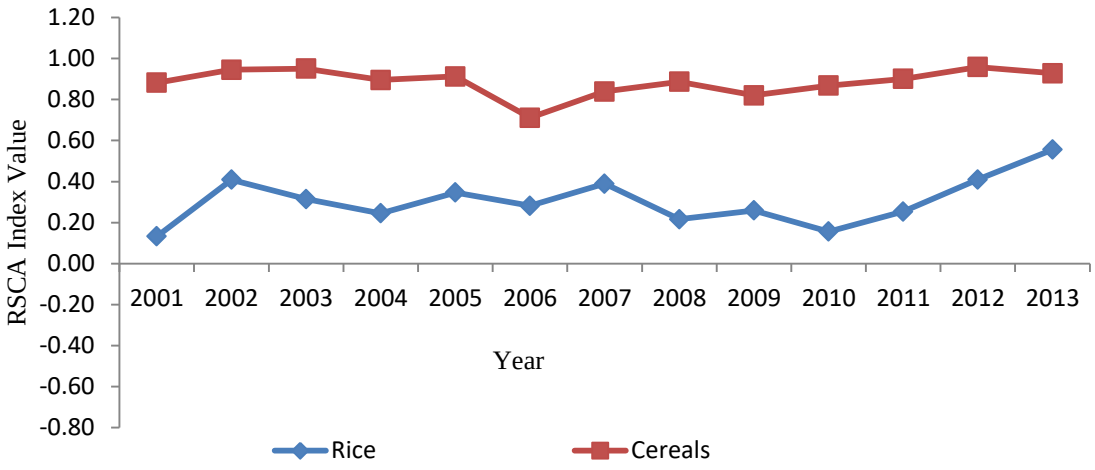
5.2.6. Rice

The values of RSCA indices for rice are presented in figure 5. It reveals that India is having comparative advantage to export it with ASEAN for all the period under consideration. In 2001, the RSCA value was 0.13 which improved to 0.56 in 2013. It implies that India's competitiveness in rice export to ASEAN has been increasing over the period. In recent past rice export has shown a remarkable growth due to the factors such as the adjustment in the exchange rate, attractive premium on exim-scrips[4] policy and inclusion of certain varieties of rice in the open general license that made the exports of rice more competitive in to the international market (Sahini 2014). Even though Indian rice are facing severe problem of Non Tariff Barriers (NTB) in ASEAN, like barriers related to product standard. for ex. Indonesia import 25 per cent broken non-basmati rice, unlike other ASEAN countries such as

[4] Exim-scrips were to be the means of obtaining access to certain categories of imports of raw materials, component and spares. They were issued on the basis of value of exports of foreign exchange earnings from exports.

Malaysia and Singapore that import 20 per cent broken non-basmati rice (Saqib and Taneja 2005). It implies that it is very difficult for exporters to meet individual country demand.

Figure 5. The Trend in RSCA index on Rice and Cereals Products



Source: Author's calculations based on ITC Database.

5.2.7. Cereals

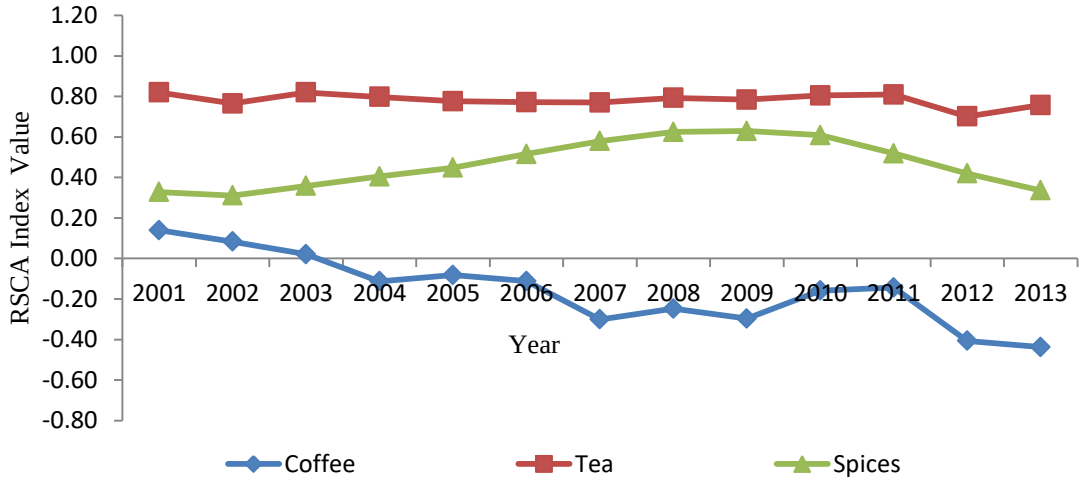
We excluded rice from cereals for this analysis. The values of RSCA indices for cereals for India with respect ASEAN has presented in figure 5. The values of RSCA indices were found positive for reference period of the study. India is enjoying comparative advantage in cereal exports to ASEAN. Hence, ASEAN is an important destination for Indian cereal export in future also.

5.2.8. Coffee

In coffee exports, Indonesia, Thailand and Vietnam are the major competitors to India. The computed RSCA values for India at the initial period were positive up to 2003 and for remaining period it was found negative (figure 6). It indicated that for coffee exports, India has comparative disadvantage in ASEAN markets. The serious concern is that Vietnam and Indonesia are improving its position at much rapid pace posing a serious threat to Indian coffee in the international markets. The major coffee producer countries like Thailand, Philippines and Vietnam they have put Indian coffee either Exclusion list or Sensitive list[5] (AIFTA Text).

Figure 6. The Trend in RSCA index on Coffee, Tea and Spices Products

[5] Under the Sensitive List member countries are bound to reduce the tariff rate but not fully eliminate.



Source: Author's calculations based on ITC Database.

5.2.9. Tea

The values of RSCA indices for tea for India are depicted in figure 6. It was found positive to have a comparative advantage in tea export to ASEAN throughout the study period. But, India's comparative advantage was stagnant around the value 0.80 for all the years. In 2001, the value of RSCA was 0.82 which fell to 0.76 in 2013 it indicating a downward trend. Sri Lanka's dominance in the global market is poising serious threat to Indian tea export in international markets (Shinoj and Mathur, 2008). As well as increase in domestic demand for tea and decrease in export to USSR are the major reasons for declining comparative advantage. Nevertheless, India can increase its tea export market share to ASEAN because is having comparative advantage for all the study period.

5.2.10. Spices

The value of RSCA indices for spices for India with respect to ASEAN presented in figure 6. India has comparative advantage in spices export to ASEAN throughout the study period. It can be noted from figure 6, that India's comparative advantage in spices export with ASEAN has been increasing from 2001 to 2009 and followed that it starts decaling to downward trend.

6. SUMMARY AND CONCLUSION

In this study we found that India's Export intensity in total agriculture trade has been increasing with respect to ASEAN than rest of the world. While, in terms of Import Intensity it is declining over the study period. The study also noted that India's trade intensity in agricultural trade is varying from country to country. Like, India's export intensity is increasing with the Vietnam, Thailand, Brunei, Cambodia, and Lao PDR over the period. On the other hand, it has been found decreasing with rest of the member countries of ASEAN such as Indonesia, Philippines, Malaysia, and Singapore. Further, on import intensity has been found very low with countries like Brunei, Cambodia and Lao PDR. In contrast, some countries have been found very high import intensity such as Indonesia (16.97), and Malaysia (7.28) particularly in the year of 2013**.** Findings of the study are consistent with the argument posed by in other studies like, Kalirajan and Bhattacharya (2007). It is notable that, both export and import indices with countries like Brunei, Cambodia and Lao PDR are found very low. It implies much future trade potential to reap between them.

Moving on India's comparative advantage on export mainly for trade of agricultural products with ASEAN has been found gradually decreasing throughout the period considered under the study. In addition to that comparative advantage has been found from 2001 to 2008, and followed it turns into comparative disadvantage in the following years of 2009-2011 followed by regaining comparative advantage in 2012 and 2013 within the ASEAN markets. Sector wise analysis of comparative advantages revealed that India has enjoyed comparative advantage in export of live animals and vegetables products with ASEAN countries other than the ROW. In case of animal or vegetable fats and prepared foodstuff products, India had been found on comparative disadvantage for all the years.

At commodity level, the pattern of India's comparative advantage with ASEAN has strong variation from across commodities. It is notable that, India has enjoyed advantages at comparative scale in the export of the products like meat, tea, rice, cereal and spices and this has been found consistent over the study period. A similar kind of patterns has been observed in export of edible vegetable and edible fruits. But, India has been losing its comparative advantage relatively to other exporters like China and Philippines in the recent years. However, for first ten years comparative advantages as been enjoyed by Indian market on those commodities. The study has found some issue of urgent attention, where even after being a big producer of those products; India is facing high comparative disadvantages on

marine products, milk products and coffee. This suggests that India has to seek new market to export these products other than ASEAN market.

Overall, it is concluded here that there is further scope for intensifying the destination of Indian agriculture goods in ASEAN markets particularly countries like Vietnam, Thailand, Brunei, Cambodia, and Lao PDR. The sources of Indian agricultural goods will be Indonesia and Malaysia in future. Moreover, the volume of agriculture trade between India and ASEAN members is very low compared to other regional agreement because India's average tariff for agriculture products is higher than the ASEAN countries. Hence, the study suggests to direct the policy initiate to promote the products, having comparative advantage in exports. It will also help to producers and exporters to select appropriate commodity for trading, which have comparative advantage. Effect should be focused on promotion of exports like Meat, Vegetables and Fruits, Tea, Rice and Cereal products for Indian exporters in ASEAN market.

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Appendix

Table A1. Country list

1	BRU- Brunei
2	CAM - Cambodia
3	LAO -Lao PDR

4	MYA - Myanmar
5	MAL - Malaysia
6	INDO - Indonesia
7	PHI - Philippines
8	SING - Singapore
9	THAI - Thailand
10	VIET - Vietnam

Table A2. The RSCA Index Value for India With respect to ASEAN for Ten Major Agricultural Products

Year	Marine products	Milk Products	Meat products	Vegetable Products	Edible Fruit Products	Coffee	Tea	Rice	Cereals	Spices
2001	-0.02	-0.50	0.32	0.27	0.33	0.14	0.82	0.13	0.88	0.33
2002	0.06	-0.64	0.35	0.36	0.36	0.08	0.76	0.41	0.95	0.31
2003	0.05	-0.59	0.38	0.41	0.33	0.02	0.82	0.31	0.95	0.36
2004	-0.05	-0.37	0.87	0.36	0.38	-0.11	0.80	0.24	0.90	0.41
2005	0.00	-0.01	0.92	0.49	0.37	-0.08	0.78	0.35	0.91	0.45
2006	-0.06	-0.17	0.93	0.45	0.35	-0.11	0.77	0.28	0.71	0.52
2007	-0.07	-0.09	0.91	0.41	0.29	-0.30	0.77	0.39	0.84	0.58
2008	-0.20	0.05	0.93	0.47	0.34	-0.25	0.79	0.22	0.89	0.62
2009	-0.07	-0.17	0.94	0.48	0.36	-0.30	0.78	0.26	0.82	0.63
2010	0.03	-0.15	0.95	0.33	0.32	-0.16	0.80	0.16	0.87	0.61
2011	0.07	-0.53	0.94	0.19	0.18	-0.14	0.81	0.25	0.90	0.52
2012	-0.04	-0.31	0.90	-0.05	-0.02	-0.41	0.70	0.41	0.96	0.42
2013	0.14	0.27	0.91	0.10	-0.02	-0.44	0.76	0.56	0.93	0.34

Source: Author's calculations based on ITC Database.

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