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Research Article

WTO and India's Agricultural Trade Potential

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Abstract: India is an agrarian economy, which contributes about 15 percent of GDP and provides livelihood to more than 50 percent of the total population of the country. WTO has shown a momentous part in the expansion of the export market for developing and developed economy. Several measures are taken by WTO in order to reduce trade restrictions and trade barriers. In this study, we have been analyzed India's agriculture trade, composition, direction and potential. The study is dependent on secondary data which is gathered from International Trade Centre, Department of Agriculture and Co-operation. Two-digits HS code products range from 01-24 were taken for the study. Few specific two and four-digit HS code products were taken to analyze the Revealed Comparative Advantage (RCA). Data were taken for the period 2001-2018. The export potential of India in international market was identified using reckoning of Balassa's index of RCA. Study reveals that there has been a positive agricultural trade balance since 1990-91. In some agriculture commodities like coffee, oilseeds, tea and wheat India has a comparative advantage in export and India have both developed and developing countries such as UAE, USA, Saudi Arabia, Vietnam and Iran are exporting partner. In the last, study suggest that the government of India should focus more on producing agriculture products which has a country comparative advantage in trade like tea, oilseeds, coffee and wheat. Study suggests that EXIM bank should provide adequate credit to encourage agricultural export. The farming should be export-oriented to meet international standards.

Keywords: Revealed Comparative Advantage, HS Code, Agriculture Trade, Composition, Direction, Potential.

1. Introduction

India is an agrarian economy, which contributes about 15 percent in GDP. This number is not massive because the growth rate of other sectors has been remaining better in last two decades however its significance in the economy cannot be denied because. It provides livelihood to more than 50 percent of the total population of the country. Nearly 70 percent of the total population of the country depends on rural income as the majority poor population is found in rural areas. Agriculture is indisputably the largest livelihood provider in India. Agriculture has witnessed many revolutions over the time since independence; the revolutions are the Green revolution, a yellow revolution, a blue revolution, and a white revolution, which makes India as self-sufficient in food provision to its population. India's food security depends on the production of fruits, milk, vegetables and cereal crops in order to fulfill the demand of increasing population of the country with increasing incomes. In order to fulfill this, there is a need to accelerate the pace of an aggressive, sustainable, diversified and productive agricultural sector.

India is considered as a global agricultural powerhouse. Milk, spices and pulses are the goods that India produce maximum with respect to the world. India has the largest cattle herd in the world, and also has the largest area for wheat, cotton and rice. Despite having huge area for cotton, wheat and rice, India is still comes second in the list to produce them. India is also second largest producer in sheep & goat meat, tea, vegetables, farmed fish, sugarcane and vegetables. We are going to study the potential of Indian agriculture in world market and for this; we would find the Revealed Comparative Advantage (RCA).

David Ricardo, an English Economist of the 19th century, gave a concept with the name of it being Comparative Advantage Theory. He considered that the output of the world would increase more than the output they would generate individually once the principle of comparative advantage is implemented by countries for the determination of the goods and services they should get specialized in producing. He recommended that the countries should get specialized by allocating their limited resources to produce the goods and services for which they have a Comparative Cost Advantage.

WTO played a momentous role in the expansion of the export market for developing and developed economy. WTO study states that the developing countries would be protected from getting exploited in the international trade market. The study has given the ideology of WTO in promoting ideal trade. The idea of this study is to show how the trade potential of the country can increase for the agricultural commodities through

RCA. The study further reveals that it examines the requirement of growth of major agricultural commodities for exports

The growth of the economy or the different sectors of the country depends on how the India agriculture performs (Tripathi and Prasad, 2009). Thus, for decreasing poverty through economic development, a living and growing agricultural sector is important (Ingco and Nash, 2004). The contribution of agrarian sector in Indian economy is constantly decreasing, but still contributes about 15 percent of GDP (2018-2019). A decline of agriculture GDP is the outcome of economic advancement (Byerlee *et al.*, 2009). For becoming self-sufficient in the production of food grains, green revolution had played a very crucial role for India.The food grains have increased from 50.82 Million Tonnes (1950-51) to 277.49 Million Tonnes (2017-18) (Department of agriculture, GOI). Due to rise in domestic demand because of increase in population growth, India's agriculture export declined however, India still has a large potential in exports. There were more fluctuations in the agricultural trade in India than the trade in other sectors (Panchamukhi, 1986).

World Trade Organization played a vital part in the expansion of the export market for developing and developed economy. Several measures are taken by WTO in order to reduce trade restrictions and trade barriers. After all contraction in trade restrictions, competition has increased. In this **st**udy, India's agriculture trade, composition, direction and potential has been analyzed in post WTO period. There are also some suggestions on policy measures for agricultural trade development.

2. Research Methodology

The study is dependent on secondary data which is taken from International Trade Centre, Department of Agriculture and Co-operation; and Economic Survey. Two-digits HS code products range from 01-24 were taken for the study. Few specific two and four-digit HS code products were taken to analyze the Revealed Comparative Advantage (RCA). Data were taken for the period 2001-2018.

3. Analytical Analysis

The export potential of India in international market was identified using the calculations of Balassa's index. In 1965, Balassa resulted an index which is used to assess a country's Comparative Advantage called the Balassa's Index. The index does not target to identify or determine the primary sources of comparative advantage but tries to classify whether a country has a "Revealed" Comparative Advantage (Utkulu & Seymen, 2004). Comparative Advantage of a country is "Revealed" if RCA > than unity. India is believed to have a Comparative Disadvantage if RCA value is less than unity. There is a possibility of agricultural trade among India and rest of the world if RCA > unity.

$$R_{ih} = \frac{X_{ih}}{X_{it}} \Big/ \frac{X_{wh}}{X_{wt}}$$

4. Balassa's Revealed Comparative Advantage Index (RCA)

$\mathbf{R_{ih}}$= Balassa's index of RCA
$\mathbf{X_{ih}}$ = India export of commodity h
$\mathbf{X_{it}}$ = Total export of India
$\mathbf{X_{wh}}$ = World export of commodity h
$\mathbf{X_{wt}}$ =Total world export

5. RCA Index

The concept of specialization includes heavy focus on one area activity and less focus on another area. RCA does not measure international competitiveness; it measures international specialization of a country in a particular sector. The potential of the country is not measured in absolute but it is measured in relative terms.

The country's export potential has been measured through RCA. It shows the trade potential of the country by which the country extends the export product. RCA can give very helpful information regarding the prospects of potential trade with new partners. There are very less chances of having bilateral trade between the countries having alike RCA profiles until and unless there is an involvement in intra industry trade. The attention through

RCA measures can be given to other non-traditional goods that might be effectively exported. For commodity *h* the RCA index is calculated by share of commodity *h* of India export in respect to total share of commodity *h* in world export.

Table 1. India's Top Importer Countries (In US Thousand dollar)

HS Code	Products	Top Countries		
01	Live Animals	Nepal- $31,024	United Arab Emirates- $23,986	Bangladesh- $5638
02	Meat	Vietnam- $3,723,988	Malaysia- $1,785,416	Indonesia- $365,123
03	Fish etc.	USA- $2,003,438	Vietnam- $1,173,820	China- $565,842
04	Dairy products etc.	USA- $93,036	UAE- $43,154	Egypt- $44,770
05	Products of animal origin	Vietnam- $59,516	Myanmar- $29,609	China- $8,970
06	Live trees	USA-$19,822	Netherlands-$11,532	United Kingdom- $6,905
07	Edible vegetable etc.	United Arab Emirates-$145,107	Sri Lanka-$100,086	Malaysia-$93,969
08	Edible fruits; and nuts	United Arab Emirates-$281,443	Netherlands- $207,358	Saudi Arab-$142,001
09	Coffee and spices etc	Vietnam-$334,093	USA-$315,439	Italy-$168,830
10	Cereals	Iran, – $1,200,515	Saudi Arab- $1,011,820	United Arab Emirates-$1,200,515
11	Products of milling industry	USA- $60,594	UAE- $33,657	Malaysia- $30,387
12	Oil seeds, miscellaneous grains etc.	USA- $239,939	Indonesia- $215,678	Vietnam- $139,828
13	Lac; gums; resins	USA- $499,036	China- $83,238	Germany- $48,389
14	Vegetables plaiting materials	Japan- $8,809	China- $7,670	Sri Lanka-$7,119
15	Animal, vegetables oils	China- $409,119	Netherlands- $141,488	USA- $116,137
16	Preparation of meat. And other aquatic invertebrates	USA- $321,851	Canada- $30,456	Belgium- $10,287
17	Sugar and sugar confectionery	Sudan- $216,054	Myanmar- $130,646	Sri Lanka- $98,298
18	Cocoa and cocoa preparations	USA- $46,490	Turkey- $18,721	Indonesia- $17,679
19	Preparations of cereals, flour etc.	USA- $88,791	Nepal- $50,334	Bangladesh- $40,581
20	Preparation of vegetables, fruits etc.	USA- $111,082	Netherlands- $58,487	UK- $47,856
21	Miscellaneous edible preparations	USA- $150,357	UAE- $48,793	Russia Federation- $47,063
22	Beverages, spirits and vinegar	UAE- $85,399	Singapore- $32,378	Nigeria- $20,690
23	Residues, waste of food industries	Vietnam- $157,186	Bangladesh- $209,953	Korea- $154,516
24	Tobacco and manufactured tobacco substitutes	Belgium- $150,709	UAE- $138,260	Afghanistan- $92,316

Source: Calculations are based on the database of International Trade Centre (ITC), Geneva, Switzerland.

Table 2. India's Top Exporter Countries **(In US Thousand dollar)**

HS Code	Products	Top Countries

01	Live animal	U.S.A – $3,418	U.K-$2,639	France – $2,597
02	Meat	Belgium –$1,188	New Zealand– $1,167	Spain - $648
03	Fish etc.	Vietnam – $23,915	U.S.A. – $18,801	Bangladesh– $15,838
04	Dairy products etc.	France - $10,347	Italy – $3,349	Germany – $2,938
05	Products of animal origin	U.S.A. – $30,851	Belgium – $6,273	Tunisia – $2,411
06	Live trees	Netherlands– $6,912	Thailand –$6,048	Italy –$3,260
07	Edible vegetable etc.	Myanmar– $293,201	Canada –$112,761	Mozambique– $104,143
08	Edible fruits; and nuts	USA – $887,627	Cote d lvoire – $329,225	Benin – $276,494
09	Coffee and spices etc	VietNam– $233,848	Sri Lanka– $93,709	Madagascar– $80,310
10	Cereals	Argentina– $24,529	Australia– $13,079	Russian Federation - $10, 575
11	Products of milling industry	China – $19,255	Australia– $17,412	Sri Lanka – $11,274
12	Oil seeds, miscellaneous grains etc.	Sudan – $103,863	Turkey – $51,475	Ethiopia – $31,853
13	Lac; gums; resins	Afghanistan– $103,489	Indonesia–$17,953	USA –$17,776
14	Vegetables plaiting materials	China – $30,622	Nepal – $6,057	Indonesia – $3,931
15	Animal, vegetables oils	Indonesia– $3,775,301	Ukraine– $1,850,978	Argentina- $1,604,839
16	Preparation of meat. And other aquatic invertebrates	Sri Lanka – $1,491	China - $643	Spain - $613
17	Sugar and sugar confectionery	Brazil – $566,048	Netherlands– $23,057	Germany– $21,963
18	Cocoa and cocoa preparations	Indonesia– $69,245	Cote d lvoire– $21,191	Singapore– $20,987
19	Preparations of cereals, flour etc.	Thailand– $14,568	Singapore– $10,901	Malaysia– $10,542
20	Preparation of vegetables, fruits etc	China – $25,282	Thailand– $10,954	U.S.A – $10,768
21	Miscellaneous edible preparations	U.S.A – $94,138	China – $16,764	Vietnam – $10,897
22	Beverages, spirits and vinegar	U.S.A – $255,410	U.K – $197,103	Singapore– $70,464
23	Residues, waste of food industries	Sri Lanka– $87,637	Thailand– $65,800	Vietnam – $63,551
24	Tobacco and manufactured tobacco substitutes	Serbia –$9,979	Zimbabwe– $6,544	Germany – $4,837

Source: Calculations are based on the database of International Trade Centre (ITC), Geneva, Switzerland.

6. India's Agriculture Trade Performance

The modern revolutions and technological reforms in Indian agriculture were led by green revolution, leading increase in agriculture production, particularly in the food grains. This had a beneficial for India's exports. Initially, India was a net importer of food grains, after that India has shift to being a net exporter of agriculture commodities due to new economic policy (NEP). Figure 1 demonstrate the agriculture trade balance grow positively after introducing NEP in 1990-91 and growing after that.

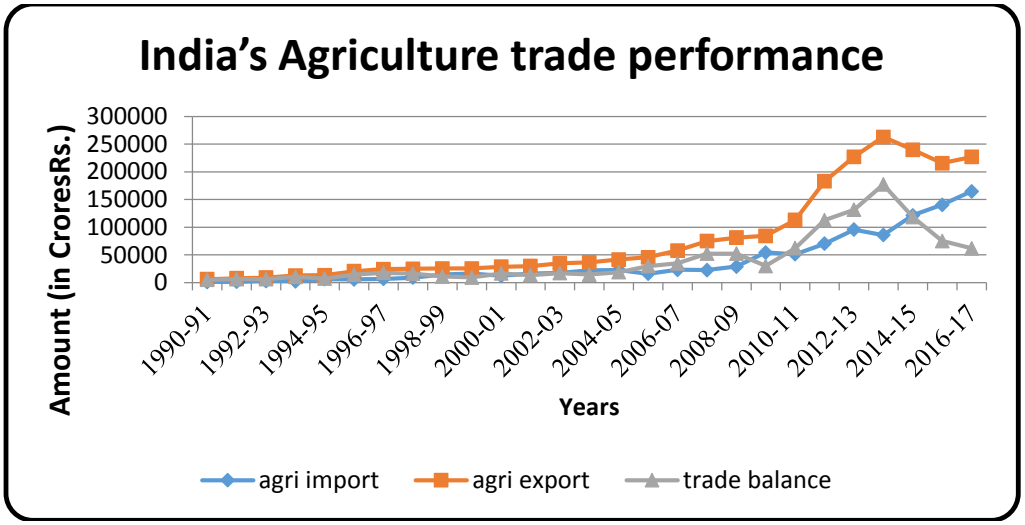

Figure 1. Export, Import and Trade Balance of Agriculture Commodities, 1990-91 to 2016-17

During the phase of LPG (Liberalization, Privatization and Globalization), the export of agriculture commodities was of Rs. 6,012.76 Crores and contributed 18.49 percent of total national exports, while imports was of Rs. 1,205.86 Crores, i.e. 2.79 percent of total national imports. Thus, there was agriculture trade surplus of Rs. 4,806.9 Crores. In 1996-97, agriculture export increased by more than four times, reaching Rs. 24,161.29, and import increased by approximately six times to Rs. 6,612.6 Crores with respect to 1990-91 and the trade surplus was raised by four times to Rs. 17,548.69 Crores. In 2000-01 there was surplus in agriculture trade of Rs. 16,571.14 Crores. During the period of six years i.e. from 2000-01 to 2006-07, the agriculture export increased by more than Rs. 25,000 Crores and reached Rs. 57,767.87 Crores and import increased by more than Rs. 10,000 Crores to reach Rs. 23,000.28 Crores. The Indian Government, in 2010 removed the restriction on export of wheat and after that the agriculture exports increased drastically. During 2000 to 2017, the agriculture export was highest in 2013-14 which estimated around Rs. 262,778.54 Crores. Agriculture export of Rs. 226,651.94 Crores and import of Rs. 164,726.83 Crores and trade balance stood at Rs. 61,925.11 Crores in 2016-17.

Table 2. Track Record of Indian Agricultural Exports, 2001-2018**.**

	Share %				
Commodities	**2001**	**2005**	**2010**	**2013**	**2018**
1. Meat	4.4	6	9.2	11.2	9.6
2. Fish, etc.	19.8	15.2	11.3	11.8	16.4
3. Dairy products etc.	1.2	2.5	1.2	1.7	1.2
4. Edible vegetables, etc.	3.8	5.6	5	3.3	3.1
5. Edible fruits: and nuts	8.7	9	5.7	3.9	4.1
6. Coffee and spices etc.	13.2	9.3	10.4	6.8	8.1
7. Cereals	14.4	19.9	15.2	27.1	20.1
8. Oilseeds	5.1	4.2	5.7	4.4	4.1
9. Lac, resins	3.8	4.2	3.4	7.2	2.8
10. Animal, vegetable oils	3.1	3.3	3.7	2.3	2.8
11. Sugar	5.7	0.8	5.4	2.8	3.1
12. Residues	7.2	8.4	10.8	8.7	4.4
13. Miscellaneous commodities	9.8	11.5	13	9	20.2

Source: The calculations are based on the database of International Trade Centre (ITC), Geneva, Switzerland.

There are 24 HS Code agricultural commodities (01-24).12 out of 24 were taken separately and remain others were taken combined as miscellaneous commodities.

7. Role of WTO in Trade Expansion

There is an international institution- World Trade Organization (WTO), who watches over the global trade rules among nations.Out of world's trading nations', majority have signed the agreement of the WTO. Giving protection and help the exporters, importers and manufacturers to manage their businesses is the main function of WTO. A platform is provided by WTO which allows member nations to settle trade disputes among other

member nation. When the trade issues among the nations are solved, then there can be smooth trade between the countries which can even increase the trade amongst them.

WTO states the ideology of ideal trade as follows:

- Non-Discriminatory- It means that WTO restricts a member of it to informally trade freely with one country and imposing heavy trade restrictions on some other country, all being WTO's members.
- Free from barriers (Protectionism) - They believe that the trade should be free as much as possible with less protectionism.
- Predictable- In order to foster the economy with which the investment decisions can take place, the business can prosper and jobs can be created well, trade should be predictable.
- Promoting fair competition- There needs to be fair trade between the nations.
- Favorable for developing countries through special regulations.

Roles of WTO

- To place and to impose regulations on international trade- If the members of WTO are violates the rules of WTO, then they can be punished.
- To settle trade issues-WTO works as a middle man to solve the disputes where if a country imposes higher tariffs on another country, the grieved country should not do the same thing with that or other country.
- To provide an environment for negotiating trade liberalization- WTO provides a platform and may organize a forum for the countries who wishes to have a trade deal which is quicker and easier than the countries doing it by themselves.
- To observe further trade liberalization- WTO ensures that if a free trade agreement is signed, then the trade actually happening is free.
- To give benefits of global trade to developing countries.

When the countries would see that the WTO is performing its functions and roles properly to prevent the developing and undeveloped countries to get exploited by the developed countries in trade, they will be tend to smoothly trade and thus would trade more. Thus it will lead to expansion of trade.

8. World Trade Organization- Agreement on Agriculture

The WTO Agreement on Agriculture was negotiated during the Uruguay Round in 1993, which was formally ratified in 1994. The Agreement on Agriculture was implemented with effect from 1.1.1995. The provisions of the Agreement stated that in 6 years and 10 years, the reduction commitments of the developed and developing countries respectively would be completed by 2000 and 2004 respectively, whereas least developed countries were not required to make any reductions.

Salient Features

The Agreement contains provisions in 3 different broad fields of agriculture and trade policy: market access, domestic support and export subsidies. Market Access- it includes the provisions of tarrification of all non-tariff barrier, access opportunities and tariff reduction. Tariffication is when all non-tariff barriers like minimum import prices, quotas, discretionary licensing etc. are eliminated and changed into an equivalent tariff. All the tariffs either ordinary or those which results from tariffication are to be reduced by an average 36 percent with least rate of reduction of 15 percent for each item under tariff over a 6 year period for developed countries. Developing countries were supposed to trim down tariffs in 10 years by 24 percent. Developing countries, who were maintaining Quantitative Restrictions (a GATT measure) owing to the problems of balance of payment, were permitted to put forward ceiling bindings in place of tariffication. For domestic support provisions, question to reduction commitments, the total support provided in 1986-88, measured by the Total Aggregate Measure of Support, should be decreased by 20 percent and 13.3 percent in developed and developing countries respectively. Reduction commitments were meant for total levels of support and not for individual merchandise. Export Subsidies is regarding the members' commitment to reduce Export subsidies. The export subsidy expenditure is required to reduce by 36 percent and volume by 21 percent over 6 years in equal installments by the developed countries whereas for developing countries, it was necessary to decrease their export subsidy expenses by 24 percent and volume by 14 percent in 10 years.

No direct subsidies for agricultural commodities are provided to the exporters of India. They get subsidies in the following forms-

a) There is no income tax implemented on Agriculture, so they get exemption in the income tax on profit

via export.

b) Subsidies on charge of freight on export delivery of certain goods such as floricultural products, vegetables and fruits.

9. Findings

Balassa's Revealed Comparative Advantage Index (RCA)

In 1965, Balassa gave the concept of Balassa's index of Revealed Comparative Advantage (RCA). The Balassa's Index reveals that the nation is potential of exporting certain agricultural products in which the RCA of the country is more than or equivalent to 1. It means that the country can focus on the export of these goods instead of exporting the goods which have RCA value less than 1. The factors that contribute to movements in RCA are economic: structural change, improved world demand and trade specialization.

Table 3. The Value of RCA for Agricultural Products (Broad category-wise) when RCA<1
India has comparative disadvantage in the products as shown in table 3.

2 Digit HS Code	Commodity Name	RCA Value<1
01	Live animals	0.082
22	Beverages	0.159
06	Live trees	0.216
18	Cocoa	0.233
04	Dairy produces	0.319
19	Preparations of cereals	0.403
16	Preparation of meat, and other aquatic invertebrates	0.481
20	Fruits.	0.544
21	Miscellaneous edible preparations	0.585
05	Products of animal origin	0.701
15	Animal fatsand oils, etc.	0.712
08	Edible fruits and nuts	0.740
11	Products of the milling industry	0.930
12	Oil seeds, miscellaneous grains, etc.	0.962
07	Edible vegetables etc.	0.983

Source: The calculations are based on the database of International Trade Centre (ITC), Geneva, Switzerland.

Indian government should make policies such that these goods should not be encouraged for exports as exporting these would be a disadvantage for the country because it will consume more resources and would cost more. Instead, the country should import these goods and focus on the goods in which RCA is greater than 1 as shown in table 4.

Table 4: The Value of RCA for Agricultural Products (Broad Category-Wise) when RCA>1
In following products India has comparative advantage.

2 Digit HS Code	Commodity Name	RCA Value>1
23	Residues	1.258
24	Tobacco	1.290
17	Sugars	1.651
02	Meat	1.737
14	Vegetable plaiting materials	2.759
03	Fish and other aquatic invertebrates	3.035
09	Coffee and spices etc.	3.749
10	Cereals	4.129
13	Lac; gums; resins	7.775

Source: The calculations are based on the database of International Trade Centre (ITC), Geneva, Switzerland.

India should export more of the goods as shown in table 4 as the value of RCA is more than 1. The resources that are available in the country are suitable for the production of the above goods and it will be suitable to export these goods. The government should encourage the producers to produce more of these goods as well as encourage exporters to export these goods. India should produce the commodities like HS10 (Cereals), HS13 (Lac; gums and resins) and so on which have a greater RCA value. The advantage of this will be that India would

produce it cheaply as compared to other countries and in good quantity which will result in the inflow of foreign currency which would give little relief in current account deficit.

Table 5. The value of RCA for Agricultural Products (Sub-Category-Wise)
The underlying table shows the revealed comparative advantage and disadvantage in the 4 digit HS code.

4 Digit HS Code	RCA Value	4 Digit HS Code	RCA Value
1003	0.012	208	0
1008	2.407	210	0.006
1007	1.716	201	0.122
1005	0.449	202	8.111
1004	0.004	205	0
1006	16.868	204	0.862
1002	0	203	0.862
1001	0.067	209	0
308	0.185	906	0.51
306	9.198	907	0.763
304	0.642	901	1.014
305	0.864	910	8.695
302	0.127	903	0.001
303	1.676	908	6.658
301	0.044	904	12.478
307	3.258	909	30.807
206	1.609	902	5.845
207	0.018	905	0.736

Source: The calculations are based on the database of International Trade Centre (ITC), Geneva, Switzerland. Detailed description about 4 digit HS Code commodity can be taken directly from ITC

India should export some commodities in which RCA is greater than 1 which are HS1006 (Rice), HS0910 (Ginger, saffron, turmeric and others), HS0909 (Seeds of anis, badian, fennel and others), HS0902 (Tea), and few others. India should export more of the products of HS0909 because it has the greatest RCA value which **is** 30.807 more than any of the agricultural goods. The demand of Indian rice in international market is higher comparing to other nations, thus the RCA value of rice is 16.86 which allows India to export it more.
There are few other goods in table 5 which has comparative disadvantage in exporting of those goods as the RCA value of it is less than 1. These goods are HS0903 (Mate), HS0905 (Vanilla), HS0907 (Cloves, whole fruits and others) and so on. The government should not encourage the exporters to export these goods.

10. Conclusion

This study shows that, country has comparative advantage in exporting some goods such as rice, tea, coffee, some spices, tobacco, sugar, meat and others, while comparative disadvantage in exporting other goods such as some spices, barley, fish, maize, wheat, edible fruits and nuts and so on. From table 1, we can see that India exports to both developing and developed countries with highest exports of agricultural goods to USA. Vietnam is India's largest importer of edible meat offal.

Fish and other aquatic invertebrates and spices, tea, Coffee and mate have shown significant growth in 2018 comparing to 2013 as shown in table 2 with their share in agricultural exports being 16.4 and 8.1 respectively. We have seen in the study that what measures WTO takes in order to ease out the facilities of trade expansion which are helpful for the developing and underdeveloped nations to remain unexploited by the strong nations. In the study, we can see that in 2013-14, the export of India is highest and fluctuating thereafter. We can also see that the agriculture import has been drastically increasing since 2013. This has led the agriculture trade balance decrease drastically.

11. Suggested Policies

Our study has recommended that government should increase the exports of agriculture products by providing the exporters subsidies through development banks and EXIM banks so that the exported agricultural products become cheaper for the exporter and is encouraged to export it more. Government should regulate the Foreign Trade Policies (FTP) so that the exporters are incentivized to export the agricultural products. Farmers of

the country should be well trained, monetized and unexploited so that they produce better quality products. The government should promote private players in this sector.

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