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A COMPARISON OF BRICS COUNTRIES AGRICULTURAL TRADE PERFORMANCE UNDER WTO PROVISION

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INTRODUCTION

The term BRIC comes from Brazil, Russia, India & China. This club has potential to overtake and change the world market and economy which is dominated by developed countries with continuous increase in economy of countries. BRICS nation not only reshaping the global economy, but also showing change the structure of world order a from last few years after the formation of this group. Together BRICS nation generate 20 % of world Gross Domestic Product (GDP). At present approximate 15 % of the world export comes from BRICs countries and these five countries have growing capacity, labour efficiency, emerging market and competitive to become most powerful group and its macro policies have potential to shape global economic order.

The World Trade Organization liberalizes the trade from the problem of trade barriers and reduces restriction by implementing its different agreements on member countries so that

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trade takes place and world economic growth takes place smoothly. Out of this bulk of the agreement one of the important, burning and most negotiable agreement is the Agreement on Agriculture (AoA) which signed in 1994 and implemented on 1st January 1995 before WTO agriculture was not the subject of GATT but in WTO main stream negotiation basically on agriculture. The agricultural trade related provisions of AoA has three main categories and divided into three broad areas which are the backbone of AoA on which international trade of agricultural commodities take place.

AkshitaGoyal, AnshumanKamila and AishwaryaDayal (2015) had explored about the four factors like per capita income, distance, trade agreement and proximity in theoretical and econometric analysis of gravity model and trade policy and development of technology play crucial and important role in international trade of commodities and services. MahendraDev and Chandrasekhar Rao (2015) had explored in their study about most comprehensive method of terms of trade between different sectors of economy. The advanced index measures the performance of different sectors and farmers income and relation among themselves so that identify minutely the degree of terms of trade is improved or adverse in agriculture sector. Fabio Bertoni, Stefano Elia and Larissa Rabbiosi (2008) found that International competitiveness increases with an increase in investment in BRICs countries and global production and market expands. Ramphul (2006) explored that in India the farm trade decreases and net terms of trade in agriculture are worse affected in WTO phase and the share of export to finance import is also very less. It implies that deterioration in the specialization of agricultural product as a whole. Bhattacharya (2004) find out in study that there is a high growth of nontraditional agricultural commodities in export then traditional commodities. Bhalla (2004) finds out high growth of import then the export from the agricultural sector. Rajashri and Nagaraj (2014) explore that there is a decline in % share of agriculture export from 1991-92 to 2009-10 and change in structure of group of commodities.

The paper is organized and analysis as follows: Section 1 analyses composition of export and import of major agriculture commodity of BRICS countries in pre and post WTO regime with their % share in agriculture export. Section 2 an attempt has been made to study the direction of export and import in between BRICS countries; this involves the separate tabular

presentation of export and import of selected agriculture in between BRICS countries in pre and post WTO era. Section 3 analyses performances by decomposition of India's export growth rate. Section 5 analyses the testing of hypothesis with the help of ANOVA analysis with that summarizes the main findings and conclusion.

Objective

The main objective of this paper to examine the trade performance of BRICS countries through (i) to study the impact of the WTO Agreement on Agriculture (A-o-A) on BRICS countries agriculture sector trade, (ii) to examine the structure of selected agricultural commodities export and import in BRICS countries post WTO era. (iii) to study the direction of trade of selected agricultural commodities in between BRICS countries post WTO era. (iv) to study the trends of trade between BRICS countries.

Hypothesis

The hypothesis of paper is that, there is a significant increase in international export of agriculture product from BRICS countries in post WTO era and there is a significant increase in export of agriculture product within BRICS countries in post WTO era.

RESEARCH METHODOLOGY

The study mainly focuses BRICS countries agricultural trade structure, direction of trade, the share of agriculture in world trade and its export performance ratio by different indicators to measure trade performance. The time span divided into two part pre WTO (1986-1995) and post WTO (2002-2011). The source of data is secondary; taken from FAOSTAT (Food and agriculture organization of the UN Statistics Division) and Economic Survey of countries. For the composition of trade top ten agricultural commodities of export and import was taken from BRICS countries

Data Analysis Procedure: Export growth rate : $G = (R-1)$, $R = F1 * F2 * F3 = X1/X$ (1) Further for testing of hypothesis t-test was used to checks the two means (average) which are reliably different from each other. $P=0.5$, there is a 5% chance of no real difference, (df) = sample size - 1.

Limitation of the Study

Data of South Africa Russia Federation within BRICS countries before 1992 not available.

Composition of BRICS agricultural trade

In table 1.1, it has been depicted the % share of major farm product in total export of BRICS countries. The share of selected agricultural commodities in Brazil total agriculture export was 70.96% and it increased to 76.48%, the reason behind that is export of sugar raw and soybeans shot up drastically. In Russia the share of all major product increased and % share of major agriculture product surged from 25.89% to 64.95%. In India, the value and quantity of all major product increased but its % share export decreased from 66.16% to 52.97% the reason behind that large variety of other commodities India export. In China, % share in total agriculture export reduced from 26.06% to 24.07%. In South Africa, % share of major agriculture commodity in total agriculture export increased from 37.66 to 60.2 because of drastic shot up of sunflower oil and wine in post AOA regime.

Direction of BRICS countries Exports of Major Agricultural Commodity

Farm export value within BRICS countries depicted in table 2 after calculating it has been found that, in Brazil the value of export share of BRICS countries grown continuously from \$2137.8 million in 2001-02 to 20143.4 in 2010-11 and there was a drastic surge in export value of Soybeans and Sugar raw centrifugal from Brazil to China and China becomes major trading partner among BRICS nations. In Russia, initially export in-between BRICS countries was almost negligible and slowly it start increasing with creeping rate, agricultural commodity export within BRICS countries surged from \$0.3 to 39.3 million in 2001-02 to 2010-11. It has been found in India, agricultural product export within BRICS countries continuously expand from \$308.1 million in 2001-02 to \$3276.8 million in 2010-11 after implication of AoA in post WTO regime. In post WTO era and after formation of BRICS there was a drastic surge in export value of Cotton lint, cake soybeans and oil castor beans from China (China Hong Kong, China Mainland, China Taiwan) and major trading partner in between BRICS nations. In China, the

value of export share of BRICS countries grown continuously from \$171 million in 2001-02 to \$728.9 million in 2010-11 after implication of AoA under WTO regime. In post WTO era after formation of BRICS there was a drastic surge in export value of Maize and cigarettes from Russia Federation with that increased in export value of Garlic from Brazil. In South Africa, it has been noticed that the export share of BRICS countries grown continuously from \$43.7 million in 2001-02 to \$323.7 million in 2010-11 after implication of AoA in post WTO regime. There was a drastic surge in export value of oranges to Russia Federation. South Africa export wide range of almost major commodities after formation of BRICS.

Decomposition of BRICS total Merchandise export growth:

In table 3, equation (1) was used to calculate (G), where active and passive expansion of agricultural product and non-agricultural product as a diversification used as a different factors or indicators to measure export growth rate of BRICS countries export growth rate. It is clear from table in Brazil, the export growth rate increased from 107.7 to 322 in pre to post WTO phase. In Russia, the export growth rate was negative but later in post WTO phase it surged drastically from -6.15 to 415.6. In India, the export growth rate increased and the export growth was almost double from 254.7 to 462 in pre to post WTO era. In China, the export growth rate was very less or negligible from 296.9 to 300 in pre to post WTO era. In South Africa the export growth rate increased and the export growth was more than double from 52.1 to 226.3 in pre to post WTO regime.

Table 1
Major agricultural export items of BRICS Countries

BRAZIL	Pre WTO 1992-95%	Post WTO 2008-11%	RUSSIA	Pre WTO 1992-95%	Post WTO 2008-11%	INDIA	Pre WTO 1992-95%	Post WTO 2008-11%	CHINA	Pre WTO 1992-95%	Post WTO 2008-11%	South Africa	Pre WTO 1992-95%	Post WTO 2008-11%
Sugar Raw	6.98	12.19	Wheat	7.2	37.26	Rice	17.18	13.5	Beans dry	1.34	1.94	Maize	10	8.81
Sugar refi	2.64	4.43	Wheat fl	1.84	1.91	Sugar raw	0.5	1.56	Garlic	0.53	3.66	Nuts, nes	0.18	1.41
Soybeans	8.59	19.89	Barley	4.06	4.76	Sugar refi	1.66	3.04	Tea	0.12	1.97	Soybean oil	0.13	0.53
Soybean oil	5.59	2.95	Beer of barley	0.16	1.67	Cashew	9.3	3.25	Cigarettes	11.31	2.57	Sunflower oil	0.72	13.61
Soybeans cake	16.55	7.75	Sunflower oil	1.86	7.36	Cake, soybeans	12.85	8.7	Tobacco products	0.13	0.23	Oranges	7.17	8.5
Coffee green	13.92	8.43	Chocolate	9.41	3.94	Oil, castor beans	3.08	2.73	Maize	4.45	0.11	Lemons & limes	0.65	1.65
Coffee	2.81	0.94	Cigarettes	0.16	1.93	Coffee	7.27	2.91	Vegetables, dehydrated	1.25	1.89	Wine	4.55	12.61
Tobacco	6.63	4.5	Soybean oil	0.04	1.53	Tea	9.05	3.29	Fruit, prepared	1.26	3.36	Apples	6.22	4.25
Meat	2.24	6.01	Repressed oil	0.03	1.33	Cotton lint	2.42	10.76	Meat, chicken	2.67	2.41	Pears	2.74	2.43
Chicken	5.02	9.4	Maize	1.12	3.26	Tobacco	2.85	3.22	Food prep	3	5.93	Grapes	5.3	6.39
% share in agriculture export	70.96	76.48	% share in agriculture export	25.89	64.95	% share in agriculture export	66.16	52.97		26.06	24.07	% share in agriculture export	37.66	60.2

Source: (FAO) Food and agriculture organization UN Statistics division (<http://faostat3.fao.org/home/E>)

Table 2
Direction of agricultural product export within BRICS countries (\$ Million)

Years	Brazil	Russia	India	China	South Africa
1985-86	145.6	*	54.3	29.4	*
1986-87	251.7	*	28.7	24.8	*
1987-88	196.9	*	11.8	37.3	*
1988-89	236.9	*	17.9	22.9	*
1989-90	181	*	81.4	36.9	*
1990-91	109.5	*	76.4	25.1	*
1991-92	204.9	*	259.5	127.7	14
1992-93	58.6	*	325.7	284.3	*
1993-94	915.5	*	272.6	176.2	14.8
1994-95	1454.1	*	644.9	127.3	19.2
2001-02	2137.8	0.3	308.1	171	43.7
2002-03	2368.8	2.5	296.1	207.5	73.9
2003-04	3291.4	1.5	345.3	135.5	81.8
2004-05	4885.4	0.6	883.8	191.7	87.4
2005-06	5081.7	278.6	1116.2	260.7	107.1
2006-07	6814.1	341.9	1546.4	323.1	123.1
2007-08	12748.9	70.4	868.2	430.7	153.9

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2008-09	11633.4	35.8	1692.9	487	165.8
2009-10	13787.6	37.9	2579.4	670.2	246.2
2010-11	20143.4	39.3	3276.8	728.9	323.7

Source: (FAO) Food and agriculture organization UN Statistics division (<http://faostat3.fao.org/home/E>).

* For the study data is not available in Food and Agriculture Organization of UN Statistics division and even not available in databank of World Bank.

Table 3
Export Growth Rate

<i>FACTOR</i>	<i>OVER ALL PERIODS</i>	<i>PRE WTO PHASE (1992-1995)</i>	<i>POST WTO PHASE (2008-2011)</i>
BRAZIL (G)	1036.4	107.7	322
RUSSIA (G)	649.9	-6.15	415.6
INDIA (G)	2959.4	254.7	462
CHINA (G)	2325.4	296.9	300
SOUTH AFRICA (G)	426.4	52.1	226.3

Source: (FAO) Food and agriculture organization UN Statistics division (<http://faostat3.fao.org/home/E>)

RESULT & DISCUSSION

After examining the research question, an analysis of variance (ANOVA) double factor with replication was produced. Comparing f-value with f-critical value, it has been found that f-value > f critical value, accept the alternative hypothesis, there is a significant increase in export of agriculture product within BRICS countries in post WTO era and there is a significant increase in international trade of agriculture product from BRICS countries in post WTO era. The last part of the analysis was the graphical presentation of interpreting interaction effect. The impact of AoA in post WTO era seemed much more pronounced in Brazil in the interaction effect than other BRICS Countries and South Africa least effected in post WTO era.

With focus on trade, an attempt was made in this paper to study the trade performance of BRICS countries before and after WTO regime. In absolute term, the export value of most of the commodities had increased from BRICS nation, except China and India; it is because of this two

countries export large variety of agricultural product. On the basis of the overall study trade performance in AOA regime it had been noticed that, the export growth rate in BRICS countries over all suggests that during the post WTO phase the bulk of total export growth is mainly supported by diversification of non agricultural product, the expansion of world agricultural markets and increase in share of active expansion of the market, increased in farm export value and export of commodities increased after implication of AoA. There is positive impact on the WTO's agreement on agriculture in post WTO era in BRICS countries. In general, the AoA of WTO has a positive impact on BRICS countries in post WTO regime. This can be a good reason to continue this agreement to increase international trade from BRICS countries. It is also clear that import of major agricultural product grown faster than export of major agriculture product from BRICS countries in the post WTO era. It is due to liberalization under the WTO and the gap between export and import narrowing after WTO regime started. BRICS countries have various economic development experience they come hard way from last 30 years, so knowledge of economic development play a strong role in the shape of the world economic order.

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