IMPACT OF WTO'S REFORMS ON THE EXPORT & IMPORT OF INDIAN AGRICULTURAL COMMODITIES

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Abstract: In this paper, the impact of WTO's reforms on the exports and imports of Indian agricultural products has been examined. WTO was established in 1995, which has been brought many new provisions for agriculture sector. Due to these structural changes, how agricultural trade in India has been affected, has thoroughly described in this study with the sample of some popular products. This paper basically emphasis on the tabular structure of agricultural trade rather than descriptive language. However, at the same time, small explanation has been covered understanding the importance of the facts. It is based only on empirical results of the study.

Key-Words: GDP, AOA, UR, QR, WTO and GATT.

1. INTRODUCTION

Indian economy is the fastest growing economy in the world. The development of every economy depends on the acceleration of trade which contributes more in GDP. At present, The India's GDP growth rate is 7.11 per cent on the basis of 2016-17 and it is dependent on various sectors viz; agriculture, industry and services. Based on 2016-17 estimates, different shares have been contributed by different sectors, likewise; agriculture 17.32 per cent, industry 29.02 per cent and 53.66 per cent share is contributed by services sector. However, as to the contribution to the employment, agriculture had contributed 49 per cent, industry provided 20 per cent and service sector revealed 31per cent. Thus, for the growth and development of Indian economy, it is necessary to focus on the agriculture sector also. In India, Agriculture is stood as very crucial in the growth of socio-economic sector of the economy as it provides employment to 49 per cent of population in the country and contributes about 17.32 per cent to the GDP of the country. The fourth quarter of 2016 touched the highest record of GDP at 5418.51 billion. Thus, it mainly forms the backbone of the Indian economy.

2. THE AGREEMENT ON AGRICULTURE (AOA)

India was a founder member of the General Agreement on Tariffs and Trade (GATT) 1947 and its successor, the World Trade Organization (WTO), which came into effect on Jan. 1, 1995 after the conclusion of the Uruguay Round (UR) of Multilateral Trade Negotiations. Due to the Agreement on Agriculture (AoA) under the WTO regime, the reforms were started in the agriculture sector. As per the AoA, all Quantitative Restrictions (QRs) have been removed since 1st April, 2001. With this removal of QRs and the liberalisation of trade in agriculture, the Indian agriculture is now exposed to the competitive environment in the global market under the WTO regime. An international Agreement on Agriculture is bound to affect a large segment of population of India, as it is an agricultural economy.

3. REVIEW OF LITERATURE

Gill and Brar (1996); observed that due to low supply response, rise in the price of agricultural commodities would not affect the Indian agriculture. Under market access provisions of the AoA, developed countries were required to convert non-tariff barriers into tariffs and commit to reduction of tariffs by simple average of 36per cent with a minimum rate of reduction of 15per cent for each tariff line and in the case of developing countries, it was committed by simple average of 24per cent with a minimum rate of reduction of 10per cent for each tariff line. **Branchi, M. et. Al (1999):** in this paper, the author analyzes the impact of price variables on the production and exports of coffee with special focus on a sub-group of Sub-Saharan countries. Further, the investigation of the importance of trade policy in determining export performance with the help of linear regression model and cross country regression analysis on the sample of 26 countries, among them 12 are the African countries over a period of 20 years, from 1970- 1990 has been done. Contribution of exchange rate and degree of producers taxation bas been evaluated with the help of Nominal Protection Coefficient technique and found that in the Case of coffee the role of domestic price policies in the production and export is relevant. Some non- price factors were also found responsible for the cross country variability in the performance of the coffee sector.

Kumar, Ratnesh (2002): observed that the agriculture sector in India had been almost unaffected by the reform process and the public distribution system (PDS) with minimum prices and it was considered an ineffective tool for poverty alleviation. The production has been increased due to the ample use of fertilizers and easy access to credit. Finally, liberalization and other reforms, both were found responsible for the growth in exports and imports of agriculture. The author also enlightened the birth of WTO, its structure, functions and about its predecessor GATT. He focused on the results of different trade negotiations round. Dispute Settlement Mechanism of WTO had also critically analyzed and found that number of average disputes had been reduced after the settlement of this mechanism in 1995.

Bagchi, Jayanta (2003): also found that in case of India, Aggregate Measure of Support was found to be negative and there was no obligation to reduce export subsidies in agriculture. Moreover, India was also found free to provide subsidies to reduce the cost

of supporting activities of agriculture. Further, a great attention has been given on the role of developed countries in the agriculture sector and concluded that the US found the largest exporter of cereal gains. The world market was mostly affected by the US trade policies due to its largest share. In this study also, the main focus has been given on the various three issues of Agreement on Agriculture like as: market access, domestic support and export subsidy. It was found that although tariffs had been reduced but there were a lot of ambiguities regarding removal of non- tariff barriers. **Chand (2005)** found that in short run, no major impact of the AoA is likely to take place on Haryana's agriculture, mainly because of three reasons. Firstly, there are no reduction commitments on domestic support because the support provided to agriculture in India is much below the de minimis level, i.e. 10 per cent as specified in the agreement. Secondly, there are no commitments on the reduction of export subsidies for the simple reason that there are no direct subsidies as such in the case of agriculture. Thirdly, India is not obliged to provide any minimum market access opportunities owing to Balance of Payment (BoP) reasons.

4. RESEARCH OBJECTIVES AND METHODOLOGY

There are two objectives in this paper, which have been examined with the help of proper research methodology steps.

RO:1 To study the impact of WTO's reforms on the exports of Indian agricultural commodities.

RO:2 To study the impact of WTO's reforms on the imports of Indian agricultural commodities.

    Selection of Sample Units: To find out the impact of WTO's reforms on the export and import of agricultural products the very important statistical measure i.e. ANOVA has been used to find out the changes in agri trade. These objectives are based on some selected principal products of Indian agriculture like as Rice, Wheat, Other Cereals, Pulses, Cotton, Sugar, Tea, Fruits, Floriculture, Spices, Vegetables, Tobacco, Beverages and Edible oils etc. The criteria for selection of these products described by researcher in the table 1 below.

Table-1
Categories of Selected Agriculture Products

Perishable Goods	Cereals & Pulses	Other products
1. Fruits	1. Rice	1. Cotton
2. Vegetables	2. Wheat	2. Sugar
3. Flowers	3. Maize	3. Coffee
4. Milk	4. Bajra	4. Tea
5. Meat	5. Barley	5. Spices
6. Dairy Products	6. Gram	6. Beverages
7. Fish	7. Moong	7. Tobacco
8. Eggs	8. Urad	8. Edible oil

    Source: Prepared by the researcher.

Study Period

To study the impact of WTO's reforms on the above products, data has been collected from Centre for Monitoring Indian Economy, India trade database from 1991-92 to 2015-16. This has been further divided into five phases given in table 2.

Table-2
Classification of time period for Objectives

Phase-I	(1991-92 to 1995-96)	Pre WTO period but after coming of LPG reforms in India.
Phase –II	(1996-97 to 2000-01)	Implementation period of WTO's provisions (6 years only for developed countries)
Phase –III	(2000-01 to 2005-06)	Implementation period of WTO's provisions (10 years for developing countries)
Phase –IV	(2006-07 to 2010-11)	Post WTO period (Indian economy faced great recession also during this time)
Phase –V	(2011-12 to 2015-16)	Post WTO period (in the light of WTO's current scenario)

Source: Prepared by the researcher.

Research Hypotheses

To examine the differences in the mean value of the dependent variables (export/import) for several categories of a single variable or factor (WTO's reforms), the one-way ANOVA has been calculated. As, ANOVA tells the difference between the two or more means are same or not. So, there have been two hypothesis set up for the achievement of this objective. These are as follows:

(H01): There was no significant impact of WTO's reforms on the exports of different selected products.

(H11): There was significant impact of WTO's reforms on the exports of different selected products.

(H02): There was no significant impact of WTO's reforms on the imports of different selected products.

(H12): There was significant impact of WTO's reforms on the imports of different selected products.

5.   ANALYSIS AND INTERPRETATION

To analyze the trends, growth, consistency, percentage share and descriptive statistics of different Indian agricultural products, various techniques had been followed; to measure the implications of World Trade Organization on the exports and imports of different selected products, the ANOVA method has been used here.

In order to apply one-way ANOVA, first of all normality conditions of all the products exports and imports over the all five phases has been tested using Shapiro Wilk test[1]. This test of normality assumes the null hypothesis that variable is normally distributed. So it is clear from the table nos. 3 (exports) and 4 (imports) that the p value was greater than the 5% for each products and in each reforms phases. The null hypothesis of normality is accepted and data is normal.

Secondly, the homogeneity of variances using Levene Statistics or Welch test has been checked out by using at 5 per cent level of significance through the use of SPSS version 21. It assumes that there is homogeneity of variances between various groups. The results of it, has been mentioned in table nos. 5 (exports) and 7 (imports) and observed except some products, all have less than 5 per cent significant value. Where this value is more than 5 per cent, there the Welch test has been used given in Table 6 further. After having normality and homogeneity of variances, ANOVA F-test was applied to check the significance difference between the mean of exports and imports under each reform category. The results of the test were given by table nos. 8 (exports) and 9 (imports).

Table-3
Results of Normality Test for Agri Products' Exports

Reforms of WTO		Shapiro-Wilk		
		Statistic	**df**	**Sig.**
exports of beverage	Phase-1	.915	5	.500
	Phase-2	.822	5	.121

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[1]For dataset small than 2000 elements, ShapiroWilk test, otherwise, the KolmogorovSmirnov test is used.

	Phase-3	.697	5	.550
	Phase-4	.969	5	.869
	phase-5	.903	5	.425
exports of coffee	Phase-1	.860	5	.230
	Phase-2	.945	5	.699
	Phase-3	.745	5	.550
	Phase-4	.775	5	.550
	phase-5	.879	5	.303
exports of cotton	Phase-1	.836	5	.153
	Phase-2	.817	5	.111
	Phase-3	.781	5	.056
	Phase-4	.984	5	.953
	phase-5	.855	5	.212
exports of floriculture	Phase-1	.801	5	.082
	Phase-2	.852	5	.201
	Phase-3	.989	5	.976
	Phase-4	.795	5	.073
	phase-5	.951	5	.747
exports of marine products	Phase-1	.906	5	.445
	Phase-2	.951	5	.747
	Phase-3	.974	5	.901
	Phase-4	.902	5	.422
	phase-5	.860	5	.230
exports of meat products	Phase-1	.889	5	.353
	Phase-2	.729	5	.055
	Phase-3	.918	5	.517
	Phase-4	.940	5	.664
	phase-5	.937	5	.647
exports of non basmati rice	Phase-1	.597	5	.055
	Phase-2	.912	5	.479
	Phase-3	.931	5	.605
	Phase-4	.861	5	.232
	phase-5	.995	5	.993
exports of other cereals	Phase-1	.890	5	.359
	Phase-2	.837	5	.158
	Phase-3	.916	5	.506
	Phase-4	.799	5	.079
	phase-5	.932	5	.607
exports of spices	Phase-1	.987	5	.966

	Phase-2	.972	5	.885
	Phase-3	.884	5	.330
	Phase-4	.989	5	.977
	phase-5	.854	5	.208
exports of tea	Phase-1	.738	5	.055
	Phase-2	.955	5	.775
	Phase-3	.934	5	.627
	Phase-4	.988	5	.973
	phase-5	.908	5	.458
exports of tobacco	Phase-1	.757	5	.055
	Phase-2	.915	5	.497
	Phase-3	.974	5	.900
	Phase-4	.892	5	.370
	phase-5	.936	5	.641
exports of vegetables	Phase-1	.920	5	.528
	Phase-2	.976	5	.913
	Phase-3	.810	5	.097
	Phase-4	.884	5	.328
	phase-5	.909	5	.460
exports of wheat	Phase-1	.837	5	.156
	Phase-2	.767	5	.055
	Phase-3	.981	5	.941
	Phase-4	.584	5	.055
	phase-5	.903	5	.427

Table-4
Results of Normality Test for Agri Products' Imports

Products	WTO's Reforms	Shapiro-Wilk		
		Statistic	df	Sig.
Imports of Edible Oil	phase-1	.730	5	.320
	phase-2	.748	5	.550
	phase-3	.938	5	.650
	phase-4	.906	5	.443
	phase-5	.859	5	.225
Imports of Fresh Fruits	phase-1	.907	5	.449
	phase-2	.961	5	.814
	phase-3	.918	5	.516
	phase-4	.907	5	.449
	phase-5	.957	5	.784

Imports of Non-Basmati Rice	phase-1	.874	5	.282
	phase-2	.867	5	.255
	phase-3	.945	4	.683
	phase-4	.552	5	.620
	phase-5	.970	5	.875
Imports of Other Cereals	phase-1	.552	5	.530
	phase-2	.637	5	.550
	phase-3	.716	5	.061
	phase-4	.955	5	.771
	phase-5	.815	5	.107
Imports of Pulses	phase-1	.829	5	.136
	phase-2	.945	5	.698
	phase-3	.973	5	.893
	phase-4	.966	5	.846
	phase-5	.893	5	.372
Imports of Spices	phase-1	.943	3	.541
	phase-2	.906	5	.443
	phase-3	.953	5	.759
	phase-4	.971	5	.884
	phase-5	.914	5	.494
Imports of Sugar	phase-1	.611	5	.080
	phase-2	.840	5	.165
	phase-3	.785	5	.061
	phase-4	.823	5	.123
	phase-5	.812	5	.101
Imports of Wheat	phase-1	.751	4	.054
	phase-2	.923	5	.551
	phase-3	1.000	3	1.000
	phase-4	.801	5	.082
	phase-5	.612	5	.051

Table-5
Test of Homogeneity of Variances for Agri Products Exports

Products	Levene Statistic	df1	df2	Sig.
Exports of Basmati Rice	20.785	4	20	.000
Exports of Beverage	4.411	4	20	.010

Exports of Coffee	2.214	4	20	**.104**
Exports of Cotton	10.249	4	20	.000
Exports of Floriculture	3.781	4	20	.019
Exports of Marine Products	12.028	4	20	.000
Exports of Meat Products	9.860	4	20	.000
Exports of Non Basmati Rice	1.734	4	20	**.182**
Exports of Other Cereals	5.258	4	20	.005
Exports of Non Spices	5.441	4	20	.004
Exports of Tea	1.482	4	20	**.245**
Exports of Tobacco	13.711	4	20	.000
Exports of Vegetables	7.321	4	20	.001
Exports of Wheat	14.848	4	20	.000

Note: Bold figures shows the values more than 5 per cent level of significance.

Table-6
Robust Tests of Equality of Means

Welch	Statistic[a]	df1	df2	Sig.
Exports of Coffee	49.351	4	9.855	.000
Exports of Non Basmati Rice	12.140	4	9.637	.001
Exports of Tea	26.525	4	9.041	.000

able-7
Test of Homogeneity of Variances for Agri Products Imports

Agri Products	Levene Statistic	df1	df2	Sig.
Imports of Edible Oil	6.132	4	20	.002

Imports of Fresh Fruits	8.590	4	20	.000
Imports of Non-Basmati Rice	24.870	4	19	.000
Imports of Other Cereals	3.164	4	20	.036
Imports of Pulses	4.898	4	20	.006
Imports of Spices	10.280	4	18	.000
Imports of Sugar	3.974	4	20	.016
Imports of Wheat	9.675	4	17	.000

Table-8
ANOVA F-test Results for Agri Products Exports

Products		Sum of Squares	df	Mean Square	F	Sig.
	Between Groups	47354891.306	4	11838722.827	49.54	.000
exports of basmati rice	Within Groups	4779315.700	20	238965.785		
	Total	52134207.006	24			
	Between Groups	397683.006	4	99420.752	114.54	.000
exports of beverage	Within Groups	17360.384	20	868.019		
	Total	415043.390	24			
	Between Groups	1205910.202	4	301477.551	34.46	.000
exports of coffee	Within Groups	174966.796	20	8748.340		
	Total	1380876.998	24			
	Between Groups	37272932.854	4	9318233.214	21.03	.000
exports of cotton	Within Groups	8861104.932	20	443055.247		
	Total	46134037.786	24			
	Between Groups	22038.730	4	5509.682	19.65	.000
exports of floriculture	Within Groups	5608.752	20	280.438		

	Total	27647.482	24			
	Between Groups	42007154.934	4	10501788.734	45.07	.000
exports of marine products	Within Groups	4660170.512	20	233008.526		
	Total	46667325.446	24			
	Between Groups	52247601.514	4	13061900.379	69.52	.000
exports of meat products	Within Groups	3757751.456	20	187887.573		
	Total	56005352.970	24			
	Between Groups	17895134.058	4	4473783.515	17.24	.000
exports of non basmati rice	Within Groups	5188792.632	20	259439.632		
	Total	23083926.690	24			
	Between Groups	3970893.982	4	992723.496	15.79	.000
exports of other cereals	Within Groups	1257803.716	20	62890.186		
	Total	5228697.698	24			
	Between Groups	20351987.282	4	5087996.820	131.71	.000
exports of non spices	Within Groups	772610.876	20	38630.544		
	Total	21124598.158	24			
	Between Groups	638578.586	4	159644.647	22.35	.000
exports of tea	Within Groups	142869.788	20	7143.489		
	Total	781448.374	24			
	Between Groups	2462621.794	4	615655.449	44.80	.000
exports of tobacco	Within Groups	274849.628	20	13742.481		
	Total	2737471.422	24			
	Between Groups	1537212.958	4	384303.239	59.69	.000
exports of vegetables	Within Groups	128757.200	20	6437.860		

	Total	1665970.158	24			
	Between Groups	3045780.486	4	761445.122	5.79	.003
exports of wheat	Within Groups	2629353.024	20	131467.651		
	Total	5675133.510	24			

Table-9
ANOVA F-test Results for Agri Products Imports

Imports of Products		Sum of Squares	df	Mean Square	F	Sig.
Imports of Edible Oil	Between Groups	291636633.792	4	72909158.448	54.360	.000
	Within Groups	26824605.748	20	1341230.287		
	Total	318461239.540	24			
Imports of Fresh Fruits	Between Groups	5383232.126	4	1345808.031	59.099	.000
	Within Groups	455442.836	20	22772.142		
	Total	5838674.962	24			
Imports of Non-Basmati Rice	Between Groups	318.341	4	79.585	3.236	.035
	Within Groups	467.352	19	24.597		
	Total	785.693	23			
Imports of Other Cereals	Between Groups	1385.578	4	346.395	3.404	.028
	Within Groups	2035.028	20	101.751		
	Total	3420.606	24			
Imports of Pulses	Between Groups	21749198.438	4	5437299.609	31.425	.000
	Within Groups	3460497.628	20	173024.881		
	Total	25209696.066	24			
Imports of Spices	Between Groups	1066243.510	4	266560.877	39.987	.000
	Within Groups	119990.787	18	6666.155		
	Total	1186234.297	22			

Imports of Sugar	Between Groups	562636.458	4	140659.114	1.478	.246
	Within Groups	1903046.180	20	95152.309		
	Total	2465682.638	24			
Imports of Wheat	Between Groups	509774.966	4	127443.741	1.585	.224
	Within Groups	1366477.098	17	80381.006		
	Total	1876252.064	21			

6. CONCLUSION

It is clear from Table 8 that p value is significant for all the products exports. A null hypothesis was that there is no significant impact of WTO's reforms on the exports of products. Here this hypothesis is rejected at 5 per cent level of significance. It means that there is significant impact of WTO's reforms on the exports of all products. On the other hand, Table 9 depicts that except wheat and sugar, p value is significant for all other products imports. A null hypothesis was that there is no significant impact of WTO's reforms on the imports of products. Here this hypothesis is rejected at 5 per cent level of significance. It means that there is significant impact of WTO's reforms on the imports of all products except only wheat and sugar.

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