

Competitiveness of Indian Agricultural Commodities – Constant Market Share Analysis

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ABSTRACT

Export competitiveness of a country in transacting agricultural commodities mainly depend upon three factors, viz., growth in demand in importing countries, competitiveness of the commodity in the international market and focus country's export share matching the demand requirements in importing countries. In this paper, the export growth of five major commodities viz., rice milled-equivalent, maize, chickpea, cotton lint and chillies and peppers, dry is decomposed through employing Constant Market Share Analysis (CMSA) into broad components and its sub components. The findings revealed that the exports of selected commodities, especially cotton lint and chillies and peppers, dry showed considerable growth during overall reference period. CMSA results showed that SE is dominant for export growth of rice milled-equivalent, SOE influenced the export growth for maize, chickpea and chillies and peppers, dry and CE accounted for export growth of cotton lint from India during overall reference period. The findings also inferred that cost-effective production, quality product, prompt shipments and assured delivery of the product in right time are the key factors for influencing export growth. So, India has to adopt dual strategy through concentrating on traditional markets by increasing export competitiveness and explore new markets for future export strategy.

Key words: India's agricultural exports, export competitiveness, Constant Market Share, Structural Effect, Competitive Effect, Second Order Effect

JEL classification: F14, Q02, Q17

I

INTRODUCTION

Exports-led growth is an important principle that is widely accepted by economists and policy makers across the world. To boost the agricultural exports from India, enhancing the export competitiveness is considered as an effective policy instrument. The re-defined agricultural trade from India with the advent of World Trade Organization (WTO) has impacted the export growth of several agricultural commodities. Though India is a major supplier of several agricultural commodities such as cereals, millets, pulses, oilseeds, commercial crops, agro-based processed and manufactured products etc., the country's export growth potential is hampered by a multitude of challenges besides stiff competition from its member countries. Under such prevailing conditions, the export growth of major agricultural commodities from India is considered as one of the important parameters to ascertain the export competitiveness. This will serve as the fundamental and pivotal driver to operate under multi-lateral trade negotiations (Lenka *et al*, 2022) in the WTO-regime. The export competitiveness itself results from many specific factors and drivers, e.g., economy, resource availability, technology, production factors availability, subsidies, domestic

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supports, policy, or climate. To generalize, three factors mainly contribute towards export growth viz., increased import demand, competitiveness of exports and adaption of export country towards demand requirements of importing country. So, these three effects explain the decomposition of export growth from India and ensure both comparative advantage (producing goods through cost-effective means compared to competing countries) and competitive advantage (ability of a country to differentiate or outperform its competitors in terms of lower trade barriers, lower taxes, access to resources etc.) (Singh, 2019). It is interesting that comparative advantage is a form of competitive advantage, as having a comparative advantage would no doubt bring many economic benefits to the country.

India is a founder member of General Agreement on Tariffs and Trade (GATT) and its membership in WTO helped to gain advantage through multilateral trade, as it enjoys comparative advantage with reference to majority of the agricultural commodities. A number of studies (Ali and Ahmad (2001); Ferto and Hubbard (2003); Kanaka and Chinnadurai (2015); Jagadambe (2016); Lamtule *et al* (2018); Sonu and Rajni (2018); Murlidhar *et al* (2018); Lakhi (2020)) have been conducted highlighting the positive impact of WTO on export performance of India. Kumar (2021) study also highlighted that despite COVID-19 pandemic, India has consistently maintained trade surplus in the agricultural products over the years. The agricultural exports from India have increased by multiple folds from US\$ 3.35 billion in 1990-91 to US\$ 41.56 billion in 2020-21. However, the share of agricultural exports in total country's exports declined from 18.47 per cent to 14.20 per cent during the same reference period. On the contrary, the agri-imports were valued at US\$ 21.47 billion, the 5.42 per cent piece of the total country's import pie during 2020-21 (Table 1). It is thus evident that India's agricultural economy enjoys a whopping US\$ 20.09 billion global trade surplus. The country enjoys trade surplus with Bangladesh, Belgium, Germany, Hongkong, Italy, Malaysia, Nepal, Netherlands, Singapore, Sri Lanka, UAE, UK, USA, Vietnam, etc., but looks to a trade deficit with Australia, China, Nigeria, South Korea, Switzerland, Saudi Arabia, Iran, Iraq, Qatar, etc., which could be cited as some of the countries serving as epicenters of shifts in the global economic power. India recorded an increase in its share of global exports from 0.60 per cent in 1991 to 1.71 per cent in 2019. In the same time-frame, India's share in global imports rose from 0.7 per cent to 2.5 per cent (Directorate General of Commercial Intelligence and Statistics (DGCI&S)).

From Table 1, it is evident that with increased international trade opportunities, the agricultural exports from India gained rapid surge. However, instead of growth in valuation of exports over a period of time, the competitiveness of agricultural commodities is an important dimension to ascertain the trade prospects of Indian agriculture (Sonu & Rajni, 2018). The export competitiveness of agricultural commodities from India directly reflect the real incomes and living standards of farmers and stakeholders and their sustenance in agri-business (Cook and Breadhl, 1991). This approach gained more prominence in modern times owing to India's active participation and regularity in supply of agricultural products into the international market. Ascertaining the competitive advantage of agricultural commodities from

TABLE 1: INDIA'S IMPORTS AND EXPORTS OF PRINCIPAL AGRICULTURAL COMMODITIES
(US\$ billion)

Year	Agricultural imports	Total national imports	Per cent of agricultural imports to total national imports	Agricultural exports	Total national exports	Per cent of agricultural exports to total national export:	Net agricultural export
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1990-91	0.67	24.08	2.79	3.35	18.14	18.47	2.68
1991-92	0.60	19.55	3.09	3.20	18.00	17.80	2.60
1992-93	0.94	20.68	4.54	2.95	17.52	16.84	2.01
1993-94	0.74	23.31	3.18	4.01	22.24	18.05	3.27
1994-95	1.89	28.65	6.60	4.21	26.33	15.99	2.32
1995-96	1.76	36.68	4.80	6.10	31.79	19.18	4.34
1996-97	1.86	39.13	4.76	6.81	33.47	20.33	4.94
1997-98	2.36	41.48	5.70	6.68	35.01	19.09	4.32
1998-99	3.46	42.39	8.17	6.06	33.22	18.25	2.60
1999-00	3.71	49.74	7.45	5.84	36.71	15.91	2.13
2000-01	2.65	50.54	5.24	6.27	44.56	14.08	3.63
2001-02	3.41	51.41	6.63	6.23	43.83	14.22	2.82
2002-03	3.64	61.41	5.92	7.16	52.72	13.58	3.52
2003-04	4.78	78.15	6.12	7.92	63.84	12.41	3.14
2004-05	5.08	107.13	4.74	9.26	83.54	11.08	4.18
2005-06	3.61	129.69	2.78	10.32	103.09	10.02	6.72
2006-07	5.08	185.60	2.74	12.76	126.26	10.10	7.68
2007-08	5.60	251.56	2.23	18.56	162.98	11.39	12.95
2008-09	6.25	299.33	2.09	17.65	183.10	9.64	11.40
2009-10	11.47	287.61	3.99	17.81	178.32	9.99	6.34
2010-11	11.21	369.37	3.03	24.80	249.46	9.94	13.60
2011-12	14.64	489.42	2.99	38.14	305.90	12.47	23.50
2012-13	17.99	501.62	3.59	42.70	307.14	13.90	24.71
2013-14	14.17	448.82	3.16	43.43	314.87	13.79	29.26
2014-15	19.84	447.58	4.43	39.20	310.15	12.64	19.36
2015-16	21.43	380.38	5.63	32.90	262.17	12.55	11.47
2016-17	24.56	384.31	6.39	33.79	275.74	12.26	9.23
2017-18	23.60	465.60	5.07	39.03	303.55	12.86	15.43
2018-19	19.60	514.09	3.81	39.27	330.04	11.90	19.67
2019-20	20.94	477.41	4.39	35.93	315.32	11.40	14.99
2020-21	21.47	395.90	5.42	41.56	292.76	14.20	20.09

Source: DGCI&S, 2020-21

India ensure several advantages like strengthening of ports' export infrastructure, quality enhancement of commodities, capture of monopoly gains in the international market, earning foreign exchange, simplifying procedural formalities at ports, planning towards need-based exports on client specifications, quality enhancement and branding of commodities, promoting trade relationships among member-countries, fixation of tariff levels etc. These advantages further enable the country in the formulation of foreign trade policy. In view of these, decomposition of export growth of major agricultural commodities during post-WTO regime period (1995-2020) was studied by employing Constant Market Share Analysis (CMSA). The article is organized into five sections. Beginning with an introduction in the first section, followed by the methodology and brief description about CMSA model in the second section, the third section presents the empirical results and discussions. Conclusions

and policy recommendations and summary and conclusions are presented in the last section.

II

METHODOLGY

The present study analyzed export competitiveness of major agricultural commodities viz., rice milled-equivalent, maize, chickpea, cotton lint and chillies and peppers (dry). These commodities represent food grains and commercial crops largely cultivated and exported from India and further their exports account for nearly 35 per cent of total agricultural product exports from India (www.fao.org). The secondary data on exports of selected commodities are obtained from Food and Agriculture Organization (FAO). To analyze the changes in export competitiveness of selected commodities during post-WTO regime, five sub-periods were taken into consideration viz., 1995-2000, 2001-2005, 2006-2010, 2011-2015 and 2016-2020 and overall reference period, 1995-2020 with a discrete two-time period (base year and an end year). The export competitiveness of selected commodities (commodity-wise) was subjected to first and second stage decompositions with reference to total world exports, exports to major countries (23 major importing countries of selected commodities) and other countries (Bowen & Pelzman, 1980, Veeramani, 2007, Singh, 2014, Pandiella, 2015, Sari and Divinagracia, 2021). Following Chen and Duan (2000), we have decomposed the change in value of exports of country k to destination j of a selected commodity, i (ΔV_{kij}) into Structural Effect (SE), Competitive Effect (CE) and Second Order Effect (SOE) as given in the following Equation 1:

$$\Delta v = \underset{(SE)}{s_{kij} \times \Delta V_{kij}} + \underset{(CE)}{V_{kij} \times \Delta s_{kij}} + \underset{(SOE)}{\Delta s_{kij} \Delta V_{kij}} \dots(1)$$

where, Δ = change over period; 0 = base period; 1 = final period; V = value of commodity exports; s = share of exports in value terms, k = India; j = the export destinations (j=1, m) of selected commodity; i is selected commodities. As the analysis was done commodity-wise, there is no 'i' in this analysis. The main and sub-components of CMSA is shown through the following Equation 2:

$$\begin{aligned} \Delta v = & \quad s^0 \Delta V \quad + \quad (\sum_i \sum_j s_{ij}^0 \Delta V_{ij} - \sum_i s_i^0 \Delta V_i) \quad + \quad (\sum_i \sum_j s_{ij}^0 \Delta V_{ij} - \sum_j s_j^0 \Delta V_j) \\ & \quad \text{(Growth Effect(GE))} \quad \text{(Market Effect(ME))} \quad \text{(Commodity effect(CoE))} \\ & + [(\sum_i s_i^0 \Delta V_i - s^0 \Delta V) - (\sum_i \sum_j s_{ij}^0 \Delta V_{ij} - \sum_j s_j^0 \Delta V_j)] \quad + \quad \Delta s V^0 \\ & \quad \text{(Structural Interaction Effect(SIE))} \quad \text{(General Competitive Effect(GCE))} \\ & + \quad (\sum_i \sum_j s_{ij} \Delta V_{ij}^0 - \Delta s V^0) \quad + \quad (V^1/V^0 - 1) \sum_i \sum_j \Delta s_{ij}^0 V_{ij}^0 \\ & \quad \text{(Specific Competitive Effect (SCE))} \quad \text{(Pure Second Order Effect(PSOE))} \\ & + \quad [\sum_i \sum_j \Delta s_{ij} \Delta V_{ij} - (V^1/V^0 - 1) \sum_i \sum_j \Delta s_{ij} V_{ij}^0] \quad \dots (2) \\ & \quad \text{(Dynamic Structural Residual Effect(DSRE))} \end{aligned}$$

Equation 2 elucidates the complete picture of main components and their sub-components in the second stage decomposition [Jepma, 1989; Chen and Duan, 2000; Mushtaq and Halil, 2005; Singh and Dey, 2011, Capobianco-Uriarte et al (2017)]. The first term on the right side of the above equation refers to the growth of the world. The second term captures the effect of the market. The third item shows effect of commodity composition. Since we considered commodity-wise analysis in CMSA, CoE will be zero in each case. The next term, SIE captures the changes in exports due to interaction of SCE and ME. The CE is derived as residuals in the equation; Δ in exports of country, 'k' of selected commodity 'i' to country, 'j' due to a change in competitiveness of country, 'k' for total agricultural exports to the world is called as GCE. Δ in exports of country, 'k' of selected commodity, 'i' to country, 'j' due to a change in competitiveness of country, 'k' in export of selected commodity, 'i' to destination, 'j' is called as SCE. The positive or negative sign implies improvement or deterioration in exports competitiveness. Δ in exports of country, 'k' of selected commodity, 'i' to country, 'j' due to interaction of SCE and SE is called as pure SOE. The SOE indicates how well the exporting country has adapted its export share to make use of the import growth of its trading partner (Meena *et al.*, 2018; Fagerberg and Sollie 1987). A negative SOE means that the exporter has lost market share in markets that grow quickly, and gain market share in markets that grow slowly and *vice versa*. Δ in exports of country 'k' of selected commodity, 'i' to country, 'j' due to interaction of SCE and ME is called as DSRE.

III

EMPIRICAL RESULTS AND DISCUSSIONS

3 (A). CMSA - Trends in Export Competitiveness (Commodity-wise Analysis):

Constant Market Share Analysis (CMSA) was employed to analyse the sources for export competitiveness of selected commodities (commodity-wise) for overall reference period (1995-20) and also during sub-periods viz., 1995-00, 2001-05, 2006-10, 2011-15 and 2016-20. Tables 2 to 6 shows the decomposition of export value of selected commodities in the world market, across selected major countries and in other countries into various components and sub-components. These components / effects depict the changes in share of India's exports in the world market during post-WTO regime. It is evident that in terms of value, the exports of selected commodities viz, rice milled-equivalent, maize, chickpea, cotton lint and chillies and peppers, dry in the world market changed by US\$ 6563.92 million, US\$ 385.88 million, US\$ 140.41 million, US\$ 1397.55 million and US\$ 1040.18 million respectively during overall reference period, 1995-2020.

(i) *Rice-milled Equivalent*: For this product (Table 2), the change in exports to the world during 1995-2020 (US\$ 6563.92 million) is mainly due to SE (53.46 per cent) followed by SOE (33.16 per cent) and CE (13.38 per cent). SE increased from 22.34

TABLE 2: EXPORT COMPETITIVENESS (CMSA) OF RICE MILLED-EQUIVALENT DURING POST-WTO REGIME

Main Component (per cent)	World						Total (Major) Importing Countries						Other countries													
	1995-00		2001-06		2011-16		1995-00		2001-06		2011-16		1995-00		2001-06		2011-16									
	00	05	10	15	20	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	
1. SE	22.34	41.55	174.87	8.50	42.90	53.46	51.64	56.06	85.30	33.35	62.21	52.34	1.09	8.06	-406.34	0.08	20.03	26.33								
a. GE	22.34	41.55	174.87	8.50	42.90	53.46																				
b. ME	3.16	31.46	160.19	-2.89	15.40	34.29																				
c. CoE	0.00	0.00	0.00	0.00	0.00	0.00																				
d. SIE	-3.16	-31.46	-160.19	2.89	-15.40	-34.29																				
2. CE	88.25	39.52	-35.73	79.47	51.50	13.38	65.52	27.84	9.13	45.04	33.36	15.10	99.83	64.68	210.22	98.95	73.26	19.70								
a. GCE	0.00	0.00	0.00	0.00	0.00	0.00																				
b. SCE	100.00	100.00	100.00	100.00	100.00	100.00																				
3. SOE	-10.59	18.93	-39.14	12.03	5.50	33.16	-17.16	16.10	5.57	21.60	4.43	32.36	-0.92	27.26	296.12	0.96	6.71	53.97								
a. PSEO	-12.00	47.90	109.55	15.13	10.80	247.81	-26.20	57.83	61.02	47.96	13.3	214.37	-0.92	42.14	140.86	0.97	9.2	273.89								
b. DSRE	112.00	52.10	-9.55	84.87	89.20	-147.81	126.20	42.17	38.98	52.04	86.7	-114.37	100.92	57.86	-40.86	99.03	90.8	-173.89								
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00								
Change in export value (US\$ million)						6563.92						6048.76														515.16

Source: Raw Data <www.fao.org>

TABLE 3: EXPORT COMPETITIVENESS (CASA) OF MAIZE DURING POST-WTO REGIME

Main Component (per cent)	World												Total (Major) Importing Countries												Other countries											
	1995-00			2001-05			2006-10			2011-15			2016-20			Overall			1995-00			2001-05			2006-10			2011-15			2016-20			Overall		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)						
1. SE	36.10	-0.64	16.11	-43.15	35.70	2.10	695.13	-17.84	40.77	-10.13	19.50	8.49	-95.50	-307.08	3.08	30.99	-44.70	0.00																		
a. GE	36.10	-0.64	16.11	-43.15	35.70	2.10																														
b. ME	36.06	-0.64	15.47	-45.48	34.94	2.07																														
c. CoE	0.00	0.00	0.00	0.00	0.00	0.00																														
d. SIE	-36.06	0.64	-15.47	45.48	-34.94	-2.07																														
2. CE	35.18	177.28	41.16	114.05	50.20	28.99	-31.57	929.99	16.34	103.87	69.70	8.63	883.03	99.69	58.89	50.69	108.60	37.03																		
a. GCE	0.00	0.00	0.00	0.00	0.00	0.00																														
b. SCE	100.00	100.00	100.00	100.00	100.00	100.00																														
3. SOE	28.73	-76.65	42.73	29.10	14.10	68.92	-563.56	-812.15	42.89	6.26	10.90	82.88	-687.53	307.39	38.04	18.32	36.20	62.97																		
a. PSOE	81.66	-43.23	103.83	25.52	28.00	237.76	1785.29	-87.33	262.41	6.03	15.6	960.91	-77.86	308.35	64.60	36.13	33.3	170.05																		
b. DSRE	18.34	143.23	-3.83	74.48	72.00	-157.76	-1685.29	187.33	-162.41	93.97	84.4	-860.91	177.86	-208.35	55.40	63.87	66.7	-70.05																		
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00																		
Change in export value (US\$ million)							385.88					387.05																								

Source: Raw Data www.fao.org

TABLE 5: EXPORT COMPETITIVENESS (CMSA) OF COTTON LINT DURING POST-WTO REGIME

Main Component (per cent)	World												Total (Major) Importing Countries												Other countries																				
	1995-			2001-			2006-			2011-			2016-			1995-			2001-			2006-			2011-			2016-			1995-			2001-			2006-			2011-			2016-		
	00	05	10	00	05	10	00	05	10	00	05	10	00	05	10	00	05	10	00	05	10	00	05	10	00	05	10	00	05	10	00	05	10	00	05	10	00	05	10						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)						
1. SE	30.50	1.23	11.50	33.89	-104.70	1.37	73.30	4.79	13.73	21.72	-88.80	5.24	26.99	-0.29	1.84	47.60	-133.10	-13.42																											
a. GE	30.50	1.23	11.50	33.89	-104.70	1.37																																							
b. ME	30.00	1.02	5.14	33.06	-121.00	0.87																																							
c. CoE	0.00	0.00	0.00	0.00	0.00	0.00																																							
d. SIE	-50.00	-1.02	-5.14	-33.06	121.00	-0.87																																							
2. CE	78.45	63.26	62.35	37.74	166.10	71.69	57.43	29.88	57.58	85.15	157.80	55.96	97.26	119.87	76.39	93.69	173.10	186.64																											
a. GCE	0.00	0.00	0.00	0.00	0.0	0.00																																							
b. SCE	100.00	100.00	100.00	100.00	100.00	100.00																																							
3. SOE	-28.95	35.51	26.15	-11.63	38.50	26.94	-30.73	65.33	28.70	-6.87	31.0	55.96	-24.26	-19.57	21.77	-41.30	60.0	-73.22																											
a. PEOE	-36.90	36.14	41.94	-20.15	23.20	37.57	-53.51	218.64	49.85	-8.07	19.7	144.23	-24.94	-16.33	28.50	-44.08	34.6	-39.23																											
b. DSOE	136.90	43.86	38.06	120.15	76.80	62.43	153.51	-118.64	50.15	108.07	80.3	-44.23	124.94	116.33	71.50	144.08	65.4	139.23																											
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00																											
Change in export value (US\$ million)						1397533						1397015																																	

Raw Data Source: <www.fao.org>

TABLE 6: EXPORT COMPETITIVENESS (CMSA) OF CHILLIES AND PEPPER, DRY DURING POST-WTO REGIME

Main Component (per cent)	World												Total (Major) Importing Countries												Other countries											
	1995-2001			2006-2011			2011-2016			Overall			1995-2001			2006-2011			2011-2016			Overall			1995-2001			2006-2011			2011-2016			Overall		
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)																		
1. SE	23.90	87.74	21.18	69.39	78.40	37.69	23.56	108.18	16.82	66.63	70.10	37.48	-15.82	78.01	48.38	73.10	213.40	43.15																		
a. OE	23.90	87.74	21.18	69.39	78.40	37.69																														
b. ME	5.46	74.08	6.56	34.02	38.17	19.24																														
c. CoE	0.00	0.00	0.00	0.00	0.00	0.00																														
d. SIE	-5.46	-74.08	-6.56	-34.02	-38.17	-19.24																														
2. CE	82.30	6.10	48.76	21.04	12.60	8.32	83.12	-3.58	55.48	23.23	18.10	8.35	124.00	14.49	26.73	18.01	-61.80	7.58																		
a. GCE	0.00	0.00	0.00	0.00	0.00	0.00																														
b. SCE	100.00	100.00	100.00	100.00	100.00	100.00																														
3. SOE	-6.19	6.15	30.06	9.57	9.00	53.99	-6.68	-4.60	27.70	10.13	11.80	54.16	-8.18	7.49	24.90	8.89	-51.60	49.27																		
a. PSOE	-7.53	100.85	61.65	45.48	71.50	648.98	-8.04	128.41	49.93	43.61	65.5	648.37	-6.60	51.68	93.16	49.35	83.5	650.08																		
b. DSRE	107.53	-0.85	38.35	54.52	28.50	-548.98	108.04	-28.41	50.07	56.39	34.5	-548.37	106.60	48.32	6.84	50.65	16.5	-550.08																		
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00																		
Change in export value (US\$ million)						1040.18						1024.69							15.49																	

Source: Raw Data <www.fao.org>

per cent to 174.87 per cent during 1995-00 to 2006-10, declined during 2011-15 (8.50 per cent) and again registered an increase by 42.9 per cent during 2016-20. During 2011-15 (8.50 per cent), the CE was dominant with 79.47 per cent and contributed for increase in rice-milled equivalent exports. However, during 2016-20, again CE (57.5 per cent) accounted major share for increase in exports and it is followed by SE (42.9 per cent) and SOE (5.5 per cent). The exports from India touched a record 21.5 m. tonnes in 2021, more than the combined shipments of the world's next four biggest exporters of the grain viz., Thailand, Vietnam, Pakistan and the USA. High domestic stocks and lower Domestic Market Prices (DMPs) allowed India to offer rice at deep discounts over the past two years, helping poorer nations, many in Asia and Africa, grapple with soaring wheat prices. The SOE accounted for less than 20 per cent during all the sub-periods and however, it out-weighed CE during 1995-2020.

Regarding major importing countries, again SE (52.54 per cent) was found dominant in influencing exports (increased by US\$ 6048.76 million) during 1995-20. This is followed by SOE (32.36 per cent) and CE (15.10 per cent). Even during majority of sub-periods (2001-05, 2006-10 and 2016-20), the changes in export value is mainly due to SE followed by CE and SOE. However, during 1995-00 and 2011-15, CE is dominant over other two effects in influencing the export value in major importing countries. But, in case of other countries, SOE is dominant in influencing change in export value during 1995-20 (53.97 per cent) and also in 2006-10 (296.12 per cent). However, for other sub-periods, CE was dominant. So, considering the overall reference period, the rice milled equivalent exports in the world and in selected major countries gained momentum mainly due to SE. This indicates that the exports of rice-millet equivalent are increased mainly due to increased demand in the world in general and in selected major countries in particular.

Referring CMSA findings across major destinations, it was found that the India's exports grown positively (Figure 1). Saudi Arabia, Iran and Iraq are the chief importing countries and these three countries together account for 39 and 36 percent shares in rice-millet equivalent exports of selected major countries and world exports from India respectively. Among these, in Saudi Arabia and Iraq, the boost in exports is mainly due to increased demand (SE). While in Iran, the increase in exports is due to SOE. In majority of the selected countries, the increase in exports is mainly due to SE and same is the case at the world-level. However, in Canada and Djibouti, CE is dominant in boosting the export.

(ii) Maize: For maize, the increase in exports in the world by US\$ 385.88 million (Table 3) is mainly due to SOE (68.92 per cent) during overall reference period, 1995-20 implying that India's exports are in tune with the requirements of importing countries (Fagerberg and Sollie, 1987). This effect is followed by CE (28.99 per cent) and SE (2.10 per cent). It is interesting that, during majority of the sub periods viz., 2001-05, 2011-15 and 2016-20, CE is dominant in boosting the maize exports. Since 2011, the SOE showed declining trend, unlike SE. With respect to major importing countries and other countries, again SOE outweighed both SE and CE in boosting the maize exports during overall period, 1995-2020. Thus, maize exports are

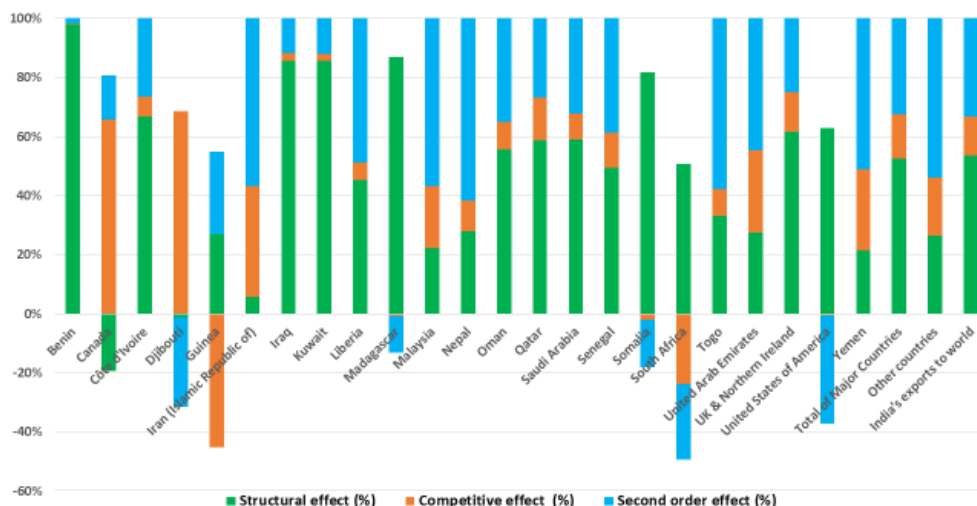


Figure 1: CMSA of India's major destinations for Rice milled-equivalent (1995-2020)

largely influenced by SOE during the overall reference period implying that India enjoyed positive correlation between export growth and market share growth in the outside world. In addition to staple food for human beings and quality feed for animals, maize serves as a basic raw material/ingredient to many of industrial products that includes starch, oil, protein, alcoholic beverages, food sweeteners, pharmaceutical, cosmetic, film, textile, gum, package and paper industries etc. So, Government of India has taken several initiatives in establishing quality testing labs to respond to plant health and food safety threats in the maize exports with respect to major importing countries. Further, the rise in exports of maize has been largely due to the various initiatives such as organizing B2B exhibitions in different countries, exploring new potential markets through product specific and general marketing campaigns. Accordingly, maize exports jump nearly six-fold in the last three years despite the corona pandemic. The Indian maize turned competitive since last two sub-periods on account of lower supplies from South American producers such as Argentina and Brazil and consequent increase in demand from consuming countries in South-East Asia such as Vietnam and Malaysia. Bangladesh also emerged as the largest buyer of Indian maize over the past few years, displacing Nepal (FICCI and PWC, 2022).

With regard to the destination-wise analysis (Figure 2), the exports are mainly directed to Bangladesh (US\$ 237.43 million), Nepal (US\$ 114.27 million) and Myanmar (US\$ 10.70 million). In majority of the selected countries and in total world exports, SOE is mainly responsible for increase in exports. For China Hongkong SAR, Cote d' Ivoire, Egypt, Iraq and Jordan, SE is responsible for boosting the exports and in Cambodia, China Taiwan Province, Japan and Malaysia increased competitiveness (CE) accounted for increase in exports.

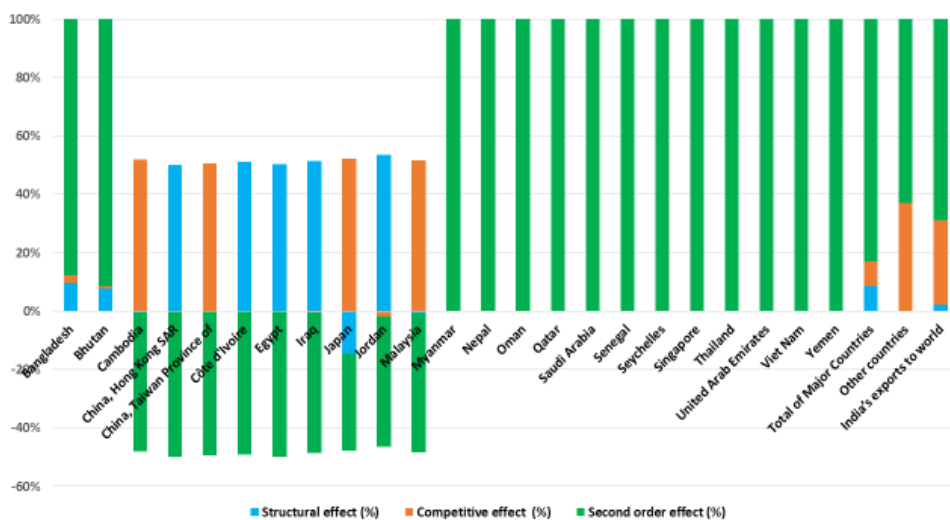


Figure 2: CMSA of India's major destinations for maize (1995-2020)

(iii) *Chickpea*: Similar to maize, for chickpea, SOE is responsible for increase in export value in the world, major exporting countries and other countries during the overall reference period, 1995-20 (Table 4). Though India is a net importer of chickpea (www.fao.org), it is interesting to note that it is adapting the exports in tune with the import requirements of the trading countries. Though the yield of chickpea is increasing over a period of time (700 kg/ha in 1995-96 to 1217 kg/ha in 2020-21 (Agricultural Statistics at a Glance, 2021)), it could not compensate the cost of production and hence, resulted in declining CE. So, CE of chickpea during selected sub-periods showed declining trend on account of increasing Minimum Support Price (MSP), cost of production and DMP. Further, with respect to country-wise performance (Figure 3), SOE is found dominant in boosting the export except in Jordan, Singapore and China mainland, where CE is responsible for increase in the exports (Singh and Dey, 2011).

(iv) *Cotton Lint*: Indian cotton lint exports were found competitive in the world market and hence, CE was dominant during both overall and selected sub-periods (Table 5). Though CE showed declining trend from 1995 to 2015, later it showed drastic increase from 2016. Similarly, with reference to selected importing countries and other importing countries, CE again influenced the cotton lint exports greatly compared to SE and SOE. At individual country-level (Figure 4), in majority of the destinations viz., Oman, Thailand, Italy, Mauritius, Philippines, Iran, Japan, Portugal, Bahrain, Tunisia, Nepal, Ethiopia, Brazil etc., the cotton exports are found competitive (CE). The same was witnessed across other countries. The leading importers viz., Bangladesh, China and Vietnam are paying higher prices on the account of prompt shipments and assured delivery of the product in right time (Jain, 2017; Bagaria and

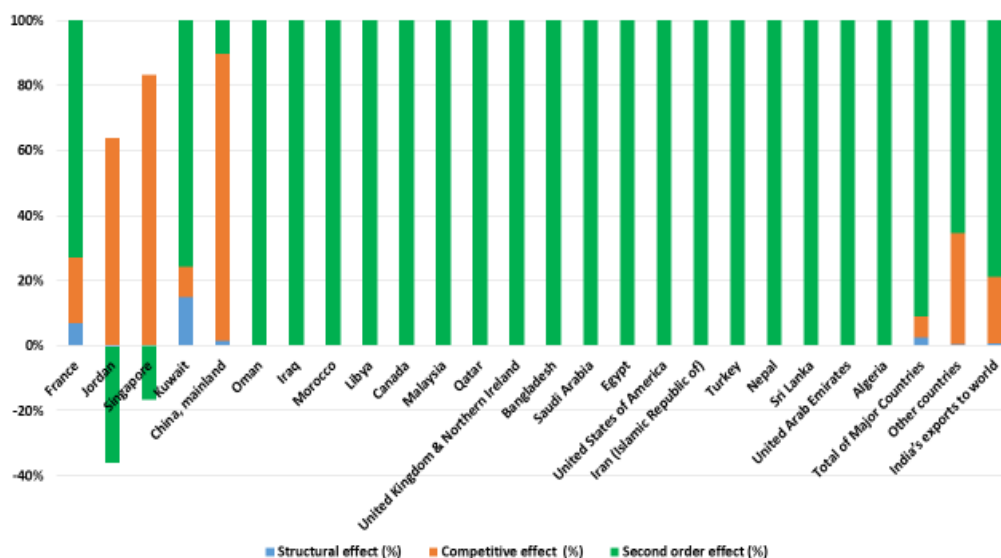


Figure 3: CMSA of India's major destinations for chickpea (1995-2020)

Saba, 2019). The increasing global consumption of cotton textiles on one side and support from Government of India with various schemes like Market Development Assistance Scheme, Export Oriented Unit (EOU) Scheme, Market Access Initiative (MAI) Scheme, Interest Equalization Scheme, Market Development Assistance (MDA) etc., are hugely benefitting the exporters of the country (Divya & Amitendu, 2021). In Vietnam, Turkey, China Taiwan Province, Republic of Korea, Malaysia and Morocco, the import demand (SE) had driven the export growth from India. In few countries like Bangladesh, China mainland, Indonesia and Belgium, SOE was dominant in influencing the cotton lint exports (Varalakshmi and Suresh, 2017).

(v) *Chillies and peppers, dry*: In world market, selected importing countries and other countries, SOE accounted for the largest shares of 53.99, 54.16 and 49.27 percents respectively of export growth of chillies and peppers (dry) during the overall reference period (Table 6). However, during majority of the sub-periods i.e., 2001-05 and 2011-15 and 2016-20, the import demand (SE) had driven the export growth and during 1995-00 and 2006-10, CE has influenced the export growth both in the world market and in selected importing countries. With respect to individual market destinations, in nine of the selected 23 countries viz., Bangladesh, China Hong Kong SAR, Iraq, Jordan, Oman, Qatar, Senegal, United Arab Emirates and Vietnam, the SE has influenced the export growth (Figure 5). The import demand was found greatly increased in United Arab Emirates, Qatar, Iraq, Bangladesh and Vietnam. CE and SOE influenced export growth in seven countries each. The exports of this commodity are found competitive in Egypt, Yemen, Saudi Arabia, Myanmar and Bhutan. In Cambodia, Seychelles, Thailand, Malaysia and Japan, the export growth from India is due to SOE.

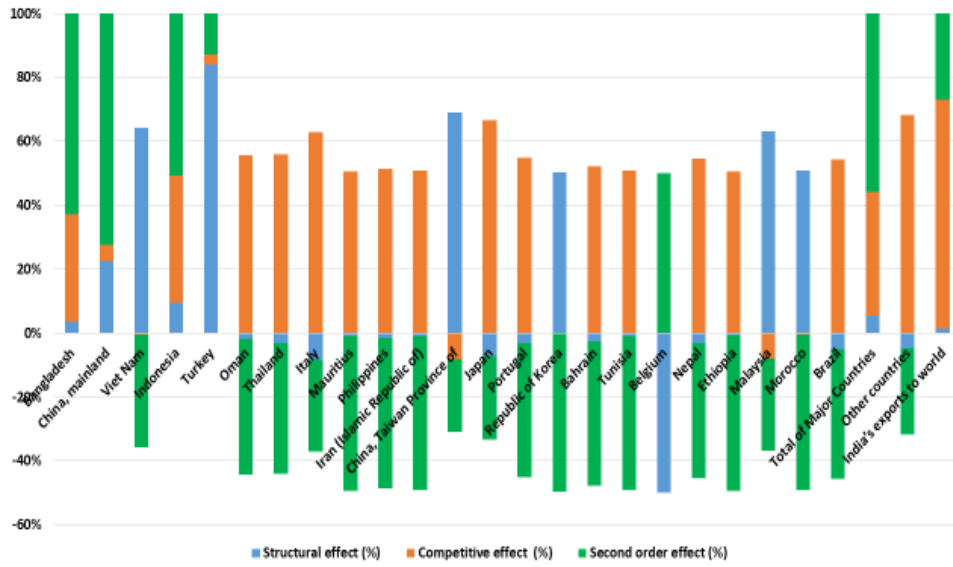


Figure 4: CMSA of India's major destinations for cotton lint (1995-2020)

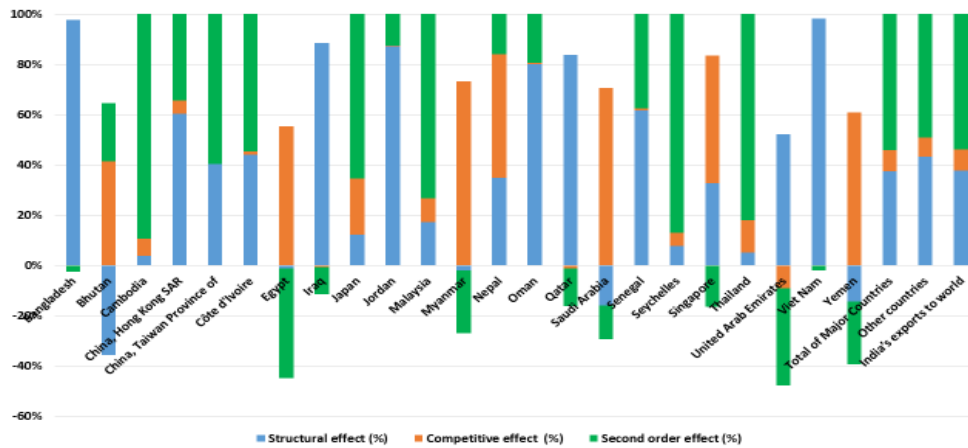


Figure 5: CMSA of India's major destinations for chillies & peppers (dry) (1995-2020)

IV

CONCLUSIONS AND RECOMMENDATIONS

Our salient findings revealed that SE influenced rice milled-equivalent exports, SOE influenced exports of maize, chickpea and chillies and peppers, dry and CE influenced exports of cotton lint in the world market during post-WTO regime, 1995-20. For rice-milled equivalent, India had benefitted more from import growth in South Africa, United States of America and Guinea, as indicated by the SE. So, to

further enhance its exports from India, the Government should continue Bhavantar Bhugtan Yojana Scheme (provide relief to farmers by providing the differential between MSP and DMP i.e., direct cash transfer instead of increasing MSP). Competitiveness of Indian cotton lint in the world market (especially in Bangladesh, China & Vietnam) is mainly due to low cost of production compared to the competing countries. Due to no-restrictions on the exports, the traders from the above three leading importers prefer to import Indian cotton lint. With the recent outbreak of coronavirus from China, the exports of cotton lint can be diverted from China to other markets such as Pakistan, Indonesia and Taiwan and this hints that India's cotton will have no difficulty finding a market elsewhere due to comparative price advantage. Further, multiple links in the value chain have to be optimized and technologically upgraded, starting from cotton seed, crop protection, crop nutrition, irrigation, mechanization, markets, ginners and the end user to ensure competitive advantage. As SOE is found dominant for maize, chickpea and chillies and peppers dry, it indicates that India is adapting export shares through matching the import growth requirements of destination countries. For majority of the destinations, the SOEs are positive for the aforementioned three commodities. This implies that India is increasing its export potential to cope up with the import requirements of these commodities of respective destination and thus, their exports are mainly directed to traditional destinations (Mercedes *et al*, 2017). Regarding maize, two major barriers include climate change and low competitiveness (CE) in the international market and these should be addressed through weather insurance products and improving the efficiency along the maize value chain. Though India is a leading producer and consumer of chickpea, it is still net importer from global market till 2021 (www.fao.org). To boost its exports, the Government of India recently announced 7 per cent export incentives for chickpea under the Merchandise Export from India Scheme (MEIS) and increase in import duty to 60 per cent to safeguard domestic farmers from huge imports. Further, encouraging cash subsidy to the farmers is essential to boost its exports. It is interesting that India's chillies (dry) exports have surged from just 0.07 lakh M. Tonnes in 2017 to 3.22 lakh M. Tonnes in Quarter 1 of 2021. Launched in 2018, India's One District - One Product (ODOP) initiative played a key role in opening up domestic Indian chilli (dry) market to leading importers like China, Thailand, Sri Lanka, Indonesia and Malaysia. This also helped Indian producers discover new markets through creating district export hubs that would push unique, local, and differentiated product globally. As chillies and peppers (dry) are a staple part of the diet for all these importing countries, and demand is, therefore, likely to remain robust from these markets over long periods. Further, no one has a massive surplus to replace Indian supplies of chillies and peppers (dry) in the international market. This calls for boosting its production to meet the growing global and domestic demands and reducing the post-harvest wastages by adapting scientific storage, efficient transport, grading and effective packaging. As India do not produce enough pepper to cater to both domestic and export markets, we import pepper mainly from Vietnam. India is facing stiff competition from Vietnam in terms of comparative advantage, and hence, Indian exporters are facing severe pricing pressure, as domestic price being very high

due to high local demand. In this context, Government of India is extending various export incentive schemes such as Focus Market Scheme (FMS), Duty Drawback Scheme and Vishesh Krishi and Gram Udyog Yojana (VKGUY), which often absorb a bit of the price shocks. Further, with the entry of corporate houses, pepper exporters could meet demand and avoid uncertainties.

In view of these findings, it is imperative for India to look for promoting competitiveness of selected commodities in the world market across the traditional destinations. At the same, it should explore new markets through assessing the comparative advantage. To conclude, as there is considerable growth in exports of selected commodities during 1995-20, India should plan for penetrating strategies through focusing on getting global reputation in the exports of quality and timely supply of products in the traditional destinations. Keeping in view the prospects for export of selected commodities, India should aim at targeting the traditional (potential) markets and even new destinations and this will certainly become the lynchpin for future export strategy. The export competitiveness of the selected commodities also needs to be analyzed from time to time for maintenance of their position in the international market.

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REFERENCES

- Ali, J. and S. Ahmad (2001), "Export competitiveness of Indian meat industry," *Indian Journal of Agricultural Marketing*, Vol.15, No. 3, pp. 120-125.
- Bagaria, N. and Saba Ismail (2019), "Export Performance of China: A Constant Market Share Analysis," *Frontiers of Economics in China*, Vol. 14, No. 1.
- Bowen, H. P. and J. Pelzman (1980), "A Constant Market Share Analysis of US Export Growth: 1962-1977," *US Department of Labor, Bureau of International Labor Affairs*, Vol. 10.
- Capobianco-Uriarte, M., J. Aparicio and J. De Pablo-Valenciano (2017), "Analysis of Spain's competitiveness in the European tomato market: An application of the Constant Market Share method," *Spanish Journal of Agricultural Research*, Vol. 15, No. 3, pp. e0113-e0113.
- Chen, K. Z. and Y. Duan (2000), "Competitiveness of Canadian Agri-Food Exports Against Competitors in Asia (1980 - 97)," *Journal of International Food and Agribusiness Marketing*, Vol. 11, No. 4, pp. 1 -19.
- Cook, M. L. and M.E Breadhl (1991), "Agribusiness Competitiveness in the 1990s: Discussion," *American Journal of Agricultural Economics*, Vol. 73, No. 5, pp. 1472 - 1473.
- Divya Murali and Amitendu Palit (2021), "India Records High Agricultural Export Growth amidst COVID-19 Pandemic," *ISAS Briefs, Quick analytical responses to occurrences in South Asia*.
- Fagerberg, J. and G. Sollie (1987), "The method of constant market shares analysis reconsidered," *Applied Economics*, Vol. 19, pp. 157-183.
- Fertö, I. and L.J. Hubbard (2003), "Revealed Comparative Advantage and Competitiveness in Hungarian Agri-Food Sectors," *World Economy*, Vol. 26 No. 2, pp. 247-259.
- FICCI and PWC (2022), *Maize Vision, 2022 - A Knowledge Report*.
- Government of India, Directorate General of Commercial Intelligence and Statistics (*DGCI&S*), *Kolkata, under the Ministry of Commerce*,
- Government of India (2021), *Agricultural Statistics at a Glance*, Ministry of Agriculture and Farmers' Welfare, New Delhi.
- Jain, M. P. (2017), "Constant Market Share Analysis of Eexport Competitiveness of Cotton: A Comparative Study of India and China," *Pacific Business Review International*, Vol. 10, No.1, pp. 77-84.

- Jagdambe, S. (2016), "Analysis of Export Competitiveness of Indian Agricultural Products with ASEAN Countries," Institute for Social and Economic Change, Bengaluru.
- Jepma, C. J (1989), "Extensions of the Constant-Market-Shares Analysis with an Application to Long-Term Export Data of Developing Countries: The Balance between Industry and Agriculture in Economic Development, Vol. 2, NO. 2, pp. 129-143.
- Kanaka S and M. Chinnadurai (2015), "A Study of Export Competitiveness of Groundnut in India," *Global Journal of Advanced Research*, Vol. 2, No. 2, pp. 512-520.
- Kumar Vinod (2021), "Trends and Performance of India's Agricultural Trade in the Midst of COVID-19 Pandemic", *Indian Journal of Agricultural Economics*, Vol. 76, No. 3, July-September, pp. 1-19.
- Lakhi Narayan Bharadwaj (2020), "Competitiveness of Indian Agriculture in the Context of Globalization", *Palarch's Journal of Archaeology of Egypt/Egyptology*, Vol. 17, No. 9, ISSN 1567-214x
- Lamtule J.A., P.P. Sawant and R.G. Deshmukh (2018), "Direction and Competitiveness of Cotton Export under WTO Regime," *International Journal of Current Microbiology and Applied Sciences*, Vol. 7, No. 1, pp. 2319-7706.
- Lenka Rumankova.; E. Kuzmenko.; I. Benesova and L. Smutka (2022), "Selected EU Countries Crop Trade Competitiveness from the Perspective of the Czech Republic", *Agriculture*, 12, 127, pp.1-31. <https://doi.org/10.3390/agriculture12020127>
- Meena, M., K.A. Khunt, H.N. Meena and H.T. Khorajiya (2018), "Assessing Export Competitiveness-of Indian Groundnut," *Agricultural Economics Research Review*, Vol. 31, No. 347-2019-570, pp. 221-230.
- Meena, Murlidhar.; K. A. Khunt.; H. N. Meena and H. T. Khorajiya (2018), "Export Competitiveness of Groundnut: A State Wise Analysis", *J. Oilseeds Res.*, 35(3), pp.210-218.
- Mercedes Campi.; Marco Due~nas.; Le Li and Huabin Wu (2017), "Diversification, Economies of Scope, and Exports Growth of Chinese Firms", *SSRN Electronic Journal*, Vol. 1; DOI: 10.2139/ssrn.3098466
- Mushtaq Ahmad Klasra and Halil Fidan (2005), "Competitiveness of Major Exporting Countries and Turkey in the World Fishery Market: A Constant Market Share Analysis", *Aquaculture Economics and Management*, Vol. 9, No. 3, pp.317-330.
- Pandiella, A. G. (2015), *A Constant Market Share Analysis of Spanish Goods Exports*, OECD Economics Department Working Papers, ISSN: 18151973.
- Sari, E. T. and M.R.G Divinagracia (2021), "Revealed Comparative Advantage and Constant Market Share Analysis of Indonesian Cinnamon in the World Market," *International Journal of Economic Policy in Emerging Economies*, Vol. 14, No. 2, pp. 187-198.
- Singh, K. (2014), "A Constant Market Share Analysis of India's Export Performance," *Foreign Trade Review*, Vol. 49, No. 2, pp. 141-161.
- Singh, K. and M.M. Dey (2011), "International Competitiveness of Catfish in the US Market: A Constant Market Share Analysis," *Aquaculture Economics and Management*, Vol. 15, No. 3, pp. 214-29.
- Singh, S. (2019), "Examining Global Competitiveness of Indian Agribusiness in the Twenty-First-Century Asian Context: Opportunities and Challenges," *Millennial Asia*, Vol. 10, No. 3, pp. 299-321.
- Sonu Madan and Rajni Sharma (2018), "Trade Competitiveness of Indian Wheat during Post-Reform Period," *Asian Review of Social Sciences*, Vol.7, No.1, pp. 25-32.
- Varalakshmi, K. and D. Suresh (2017), "Competitiveness of Indian Bovine Meat Exports – Constant Market Share Analysis," *Indian Journal of Animal Sciences*, Vol. 87, No. 8, pp. 1026-1033.
- Veeramani, C. (2007), "Sources of India's Export Growth in Pre-and Post-Reform Periods," *Economic and Political Weekly*, Vol. 42, No.25, June 23, pp 2419-2427.