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Dynamics of Palm Oil Import on Prices, Income and Trade of Indian Edible Oil Sector

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ABSTRACT

The present study aims to capture the implications of palm oil import on the Indian edible oil sector in terms of price, income and international trade. Being the net importer of edible oil over a long period, import tariff simulations on palm oil, which constitute a major share of our import basket on the domestic producer price, consumer price, income of the domestic edible oil processing industry and government revenue were studied under by partial equilibrium setting. The domestic edible oils considered for the study were palm oil, soybean oil, rapeseed and mustard oil, sunflower oil and other major traditional oils viz., coconut oil, groundnut oil and cotton seed oil - categorised as other edible oils. The import of palm oil had significant influence on the domestic edible oil sector indicating the higher substitutability of palm oil owing to its low price and compatibility to blend with domestic edible oils. The variation in domestic production, consumer price, industry income and government revenue were in the same direction as that of tariff and import price of palm oil. Domestic consumers are the major beneficiaries of reduction in tariff and import price of palm oil, while processors benefitted more than the producers of domestic oils from hike in tariff and import price. The import policy must aim at protecting the welfare of all the stakeholder of edible oil sector, viz., producers, processors and consumers.

Keywords: Palm oil imports, Price, Income, Trade effects, Indian edible oil sector.

JEL: F14, F47, F61, Q17

I

INTRODUCTION

India is one of the largest consumers of edible oil in the world with a total domestic consumption of 21.69 million MT in 2019-20. However, the country is not able to meet its raising demand with lower domestic production. The low yield of oilseeds and declining prices of edible oils due to increasing import have made the oilseed production in India highly unattractive resulting in stagnation of oilseed production (Srinivasan, 2005). Though India attained self-sufficiency in production of oilseeds and edible oil in the early 1990s due to Yellow Revolution and Technology Mission on Oilseeds (TMO), the low price of oils in the international market in mid-1990s and liberalisation of trade increased the edible oil imports considerably. In the edible oil complex, edible oils from India were not competitive, while the oil cakes/meals were highly competitive (Reddy *et al*., 2011).

During 1993-94, import of palmolein and subsequently, the import of other edible oils had been placed under Open General Licence (OGL) list. This made a

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drastic change in the import of edible oils, which shifted from negative list of import to one of the most imported commodities in India. As seen from Figure 1, the import duty was high up to 80 per cent on crude oil and 90 per cent on refined oil during early 2000s, which was in 2008 reduced to zero per cent and 7.5 per cent on crude and refined oils, respectively. Thereafter, the import duty was increased and decreased depending on the demand and price situations. By 2018, the Indian government increased the import duty on palm oil to 44 per cent on crude and 54 per cent on refined oil as there was a steep fall in the world prices and domestic prices of the oil. With the ASEAN trade agreement and ASEAN-India Free Trade Agreement (AIFTA), India is bound to reduce tariff on palm oil imports further, as the major source of India's palm oil import is the ASEAN countries – Indonesia and Malaysia.

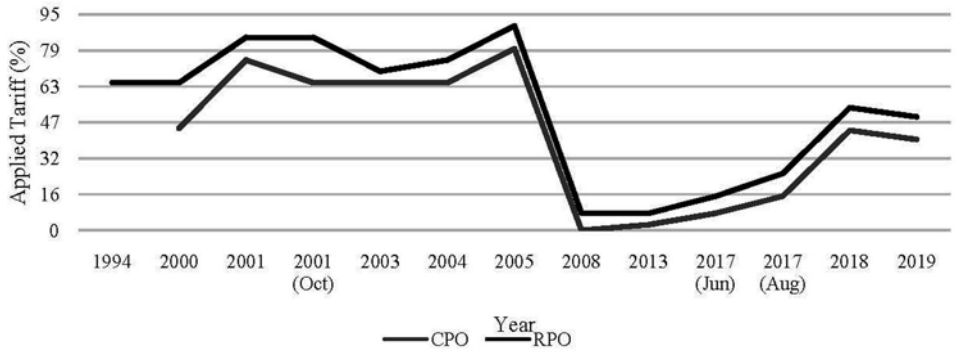

Figure 1. Applied Rate of Import Tariff for Palm Oil to India.

The constant increase in consumption, low productivity of oilseeds and high price of traditional oils in India and low price in international market and liberalisation of trade policies resulted in the shift from self-sufficiency to highly import dependent in edible oils. In 2019-20, India imported nearly 15.08 million MT of vegetable oils out of which palm oil occupied the major share of 59 per cent. Besides the lower price and tariff reduction, compatibility of the palm oil to be blended with other edible oils contributes to the high demand for imported palm oil. There was a drastic increase in the import of palm oil from 2000 MT in 1971 to 165000 MT in 1991 and to 2.7 million MT in 2001 and 9 million MT in 2019.

Owing to the widening price gap between the traditional oils and imported oils, the domestic consumption pattern of edible oil changed considerably over the period. The palm and soybean oils which once contributed less than 4 per cent in the total edible oil consumption emerged to be the major oils consumed in the past decade. Currently, the major edible oils consumed in India are palm oil (40 per cent), soybean oil (22 per cent), sunflower oil (13 per cent) and rapeseed oil (12 per cent).

Being a major importer of edible oil in the world, the domestic edible oil sector of India is highly responsive to the import policies. The price and quantity of

imported palm oil has considerable impact on the domestic edible oil prices and consumption. This can be captured in the model for trade policy analysis through estimates of the elasticity of substitution between the imported and domestic goods, i.e., Armington elasticity. These models employ the price and demand shift for the imported goods in determining the impact of trade policies on the prices, demand, trade and profitability of the domestically produced goods. More than the producers of oilseeds, it is the oil processing industry that is highly influenced by the import tariff and price of the palm oil, as the oil is mostly imported in the crude form. Apart from the domestic demand and international price, geopolitics situations bring about dynamics in the import of palm oil in India.

In this regard, an attempt has been made to study (i) the influence of dynamics of palm oil import on the major edible oils consumed in India, viz., domestic palm oil, soybean oil, rapeseed and mustard oil, sunflower oil and other edible oils and (ii)The impact of changes in import tariff and import price of palm oil on the domestic production, price, income of the domestic edible oil industry and government revenue.

II

METHODOLOGY

Data on production, consumption, import, export, demand, supply, prices and import tariff of edible oils were collected from various sources, viz., Index-Mundi, Ministry of Commerce and Industry, Government of India, Central Board of Indirect Taxes and Customs and UN - COMTRADE for the year 2015 and 2019. Data on palm oil imports included both crude and refined form whereas the wholesale price of the edible oil was assumed to be the producer/processor price, while retail price as the consumer price. Based on domestic consumption, palm oil (PO), soybean oil (SO), rapeseed and mustard oil (RO), sunflower oil (SF) were selected for the study (Figure 2). Other major traditional oils, viz., coconut oil, groundnut oil and cotton seed oil were aggregated under the category of other edible oils (EO).

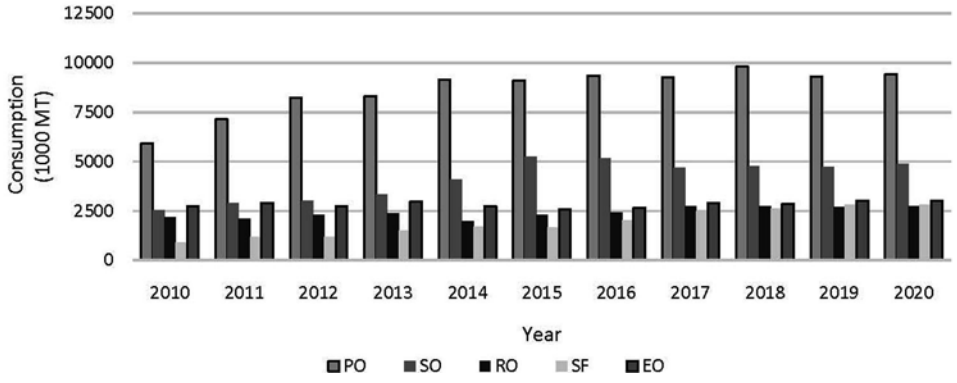

Figure 2. Consumption of Edible Oils in India.

Model-based simulations are suitable for trade policy analysis to project the economic effects of policy changes that have not yet occurred (Hallren and Riker, 2017). In the present study, the influence of import tariff and import price of palm oil and their combined effect on domestic edible oil sector are studied using the partial equilibrium model.

The model assumed perfect substitution between the imported palm oil and domestically produced edible oils. The elasticity of substitution between imported palm oil and domestic edible oils are modelled using Armington elasticity of substitution as incorporated in the model. It represented the elasticity of substitution between the commodities of different countries or regions, and is based on the assumption made that commodities traded internationally are differentiated by country of origin (Armington, 1969).

The simulation-model can be specified as

$$q_d^p = q_{cd}^p + \sigma S_m(p_m^p - p_d^p)$$

The superscript 'p' in the model indicates the proportionate change. The proportionate change in the demand for domestic edible oils is represented by q_d^p, while q_{cd}^p denotes the proportionate change in the demand for the composite of domestic edible oil and imported palm oil. The share of imported palm oil in consumer expenditure is represented by Sm = 1 - Sd, where Sd is the share of domestic edible oil in expenditure, and the term σ denotes the Armington elasticity of substitution between the imported palm oil and domestically produced oils. The proportionate change in the consumer price of imported palm oil and domestic edible oil is denoted by p_m^p and p_d^p respectively.

The consumer price of imported palm oil is arrived at from world price and the import tax on palm oil import, where import tax is obtained from world price and tariff rate,

$$p_m = PW + MTAX$$
$$MTAX = IP \times MTAR$$

where, p_m - Consumer price of imported palm oil;

PW = World price of palm oil;

IP = Import Prices;

MTAX = Import tariff on palm oil;

MTAR = Applied tariff on palm oil import (percentage)

The model was simulated for the impact of 25 per cent and 50 per cent increase and decrease in the import tariff and also the import price of palm oil on domestic edible oil sector of India.

III

RESULTS AND DISCUSSION

The changes in domestic production, price, income and government revenue indicated the variation from base value which considered all the variables at 2019 level. In 2019, the applied tariff rate was fixed at 44 per cent and 54 per cent for the import of crude and refined palm oil, respectively. As the study has been conducted by aggregating crude and refined oils, the import tariff on palm oil has been taken as an average of the tariff on crude and refined palm oil i.e., 49 per cent. Reduction in tariff by 25 per cent and 50 per cent arrived at the tariff rate of 36.75 per cent and 24.5 per cent respectively, while 25 per cent and 50 per cent increase denoted 61.25 per cent and 73.5 per cent of import tariff that would fall within the WTO's bound tariff rate of 300 per cent.

Impact of Tariff and Import Price of Palm Oil on Domestic Price of Edible Oils

India being the largest importer of palm oil in the world, and imported palm oil occupying major share of its domestic edible oil consumption, any change in the tariff rate and import price is directly reflected in the domestic oil price. As seen from Table 1, reduction and increase in import tariff and price of palm oil has led to reduction and increase in the domestic price of edible oils, respectively. Thus, the changes in import policy and price of palm oil has direct influence on the entire edible oil sector owing to the major share of imported palm oil in edible oil consumption in India and palm oil being highly substituted and blended with other major edible oils. The changes in domestic prices of edible oils due to change in import price of palm oil was more than that of the impact caused by the change

TABLE 1. IMPACT OF TARIFF AND IMPORT PRICE OF PALM OIL ON DOMESTIC PRICE OF EDIBLE OILS

(₹ / *mt*)

Commodity		PO	SO	RO	SF	EO
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Base		71489	82922	109176	102181	128310
Import tariff	25 per cent reduction	63683	73980	97559	90944	116768
	50 per cent reduction	55877	65038	85943	79707	105226
	25 per cent increase	79295	91863	120792	113418	139852
	50 per cent increase	87101	100805	132408	124655	151394
Import price	25 per cent reduction	47752	55731	73852	68011	93213
	50 per cent reduction	24015	28540	38528	33842	58115
	25 per cent increase	95226	110112	144499	136351	163407
	50 per cent increase	118963	137303	179823	170520	198505
Import tariff and price	25 per cent reduction	41897	49024	65140	59584	84556
	50 per cent reduction	16209	19598	26912	22605	46573
	25 per cent increase	104984	121289	159020	150397	177835
	50 per cent increase	142382	164128	214672	204231	233131

Notes: PO – Palm oil, SO – Soybean oil, RO – Rapeseed and Mustard oil, SF – Sunflower oil, EO – Other edible oils.

in tariff rate, while the combined effect of tariff and import price was more than the individual effect (Figure 3). This indicated that trade liberalisation has benefitted the consumers of edible oil by reducing the tariff rate and increasing the import of low-priced oils and any increase in tariff would reduce the consumer surplus as suggested by Ghosh (2009).

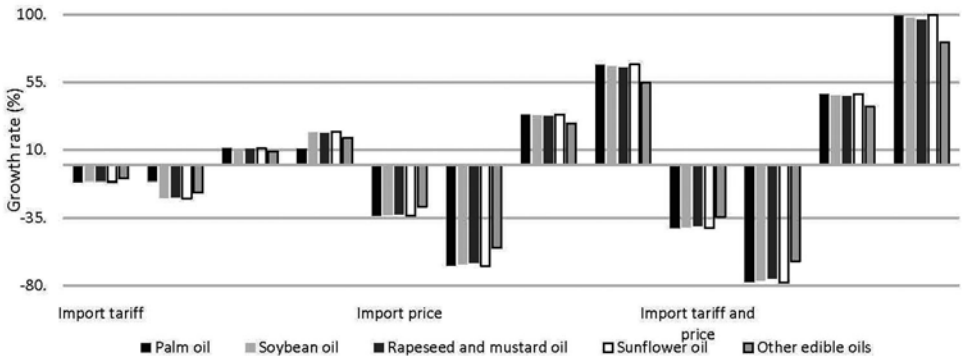

Figure 3.Growth Rate in Domestic Price of Edible Oils.

Effect of Tariff and Import Price of Palm Oil on Domestic Production of Edible Oils

Reduction in import tariff and price of palm oil led to reduction in the edible oil production in India as any reduction in tariff and import price is likely to increase the import of palm oil and in turn make domestic production unattractive. Similarly, when the tariff and import price of palm oil increased, the domestic production of edible oils also increased. This suggests that increase in import tariff and price palm oil benefitted the domestic producers of oilseeds. The changes in the soybean oil and other edible oil production are comparatively more implying that production of soybean oil and other traditional oils are highly influenced by tariff and import price of palm oil.

Compared to domestic price, the changes in domestic production due to change in import price of palm oil was more than that caused by the change in tariff rate and, the combined effect of tariff and import price was more than the individual effects indicated in Table 2. But the changes in production were less than the changes in domestic price of edible oils except for soybean oil and other edible oils (Figure 4). For soybean oil, the changes in domestic production and price are almost on par, while for other edible oils the changes in production was more than the changes in domestic consumer price.

Impact of Tariff and Import Price of Palm Oil on Income of the Edible Oil Industry

The income of the domestic edible oil industry has been computed by multiplying the total domestic consumption by consumer price. Thus, any changes in the consumer price is directly reflected in the industry income and, changes in tariff and

TABLE 2. IMPACT OF TARIFF AND IMPORT PRICE OF PALM OIL ON DOMESTIC PRODUCTION OF EDIBLE OILS

('000 MT)

Commodity		PO	SO	RO	SF	EO
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Base		310	1507	2665	100	3022
Import tariff	25 per cent reduction	289	1348	2445	92	2723
	50 per cent reduction	267	1189	2225	83	2423
	25 per cent increase	331	1666	2885	108	3321
	50 per cent increase	353	1825	3105	117	3621
Import price	25 per cent reduction	245	1023	1996	75	2112
	50 per cent reduction	180	540	1328	49	1202
	25 per cent increase	375	1991	3334	125	3932
	50 per cent increase	440	2474	4002	151	4842
Import tariff and price	25 per cent reduction	229	904	1832	68	1888
	50 per cent reduction	158	381	1108	41	903
	25 per cent increase	402	2189	3608	136	4306
	50 per cent increase	505	2951	4662	176	5740

Note: PO – Palm oil, SO – Soybean oil, RO – Rapeseed and Mustard oil, SF – Sunflower oil, EO – Other edible oils.

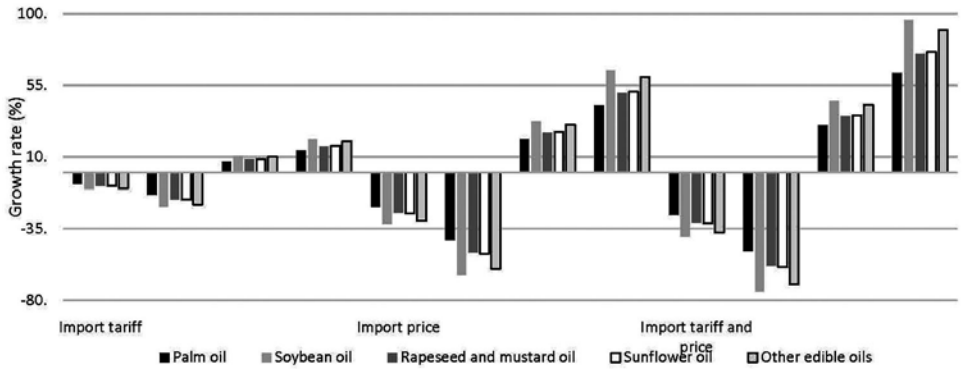

Figure 4. Growth Rate in Domestic Production of Edible Oils.

import price of palm oil have similar effect on income as that on domestic price of edible oils. The income changes in the same direction as that of tariff and import price of palm oil owing to the similar direction of change in domestic price of edible oils as that of tariff and import price of palm oils given in Table 3.

Influence of Tariff and Import Price of Palm Oil on Government Revenue

The government revenue has been estimated by multiplying the total value of imports by the tariff rate and thus, any changes in the tariff and import price of palm oil alters the government revenue proportionately. In Table 4, it is found that the increase in government revenue as a result of combined effect of increase in tariff and import price is more than the decline in revenue due to reduction in tariff and import price.

TABLE 3. IMPACT OF TARIFF AND IMPORT PRICE OF PALM OIL ON INCOME OF EDIBLE OILS FIRM

(₹ '*million*)

Commodity		PO	SO	RO	SF	EO
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Base		665563	390312	295320	286107	388138
Import tariff	25 per cent reduction	592888	348222	263897	254643	353223
	50 per cent reduction	520212	306133	232475	223180	318308
	25 per cent increase	738239	432401	326742	317570	423053
	50 per cent increase	810914	474490	358165	349034	457967
Import price	25 per cent reduction	444571	262325	199769	190432	281968
	50 per cent reduction	223578	134339	104219	94757	175799
	25 per cent increase	886556	518298	390870	381782	494307
	50 per cent increase	1107549	646284	486420	477457	600477
Import tariff	25 per cent reduction	390064	230758	176203	166834	255782
and price	50 per cent reduction	150902	92250	72797	63293	140884
	25 per cent increase	977401	570909	430148	421111	537951
	50 per cent increase	1325576	772552	580688	571847	705221

Note: PO – Palm oil, SO – Soybean oil, RO – Rapeseed and Mustard oil, SF – Sunflower oil, EO – Other edible oils.

TABLE 4. IMPACT OF TARIFF AND IMPORT PRICE OF PALM OIL ON GOVERNMENT REVENUE

(₹ '*million*)

(1)	(2)	(3)
Base		292210
Import tariff	25 per cent reduction	219157
	50 per cent reduction	146105
	25 per cent increase	365262
	50 per cent increase	438315
Import price	25 per cent reduction	219157
	50 per cent reduction	146105
	25 per cent increase	365262
	50 per cent increase	438315
Import tariff and price	25 per cent reduction	164368
	50 per cent reduction	73052
	25 per cent increase	456578
	50 per cent increase	657472

Note: PO – Palm oil, SO – Soybean oil, RO – Rapeseed and Mustard oil, SF – Sunflower oil, EO – Other edible oils.

IV

CONCLUSION

The dynamics of imported palm oil prices and tariffs have significant impact on the domestic edible oil sector of India in terms of price, income, trade and revenue effects on the edible oil stakeholders and institutions. The import dependence on palm oil and its influence revealed that the higher substitutability of palm oil owing to its low price and compatibility to blend with other edible oils of domestic origin. Though the increase in tariff and import price of palm oil benefitted the oil processors, it increased the burden on the consumers by increasing the domestic edible oil price. The processors gain more than the producers of oilseeds in India from tariff and import price hike as they are the direct beneficiaries of increase in consumer price. In order to study the real influence of trade liberalisation and the

subsequent edible oil imports, segregation of imported edible oil basket of India in terms of palm oil (crude and refined), soya oil (crude and refined) and sunflower oil under general equilibrium framework is a must.

REFERENCES

Armington, Paul (1969), "A Theory of Demand for Products Distinguished by Place of Production", International Monetary Fund Staff Papers, Vol.XVI, pp.159-78.

Ghosh, N. (2009), "Effects of Tariff Liberalization on Oilseed and Edible Oil Sector in India: Who Wins and Who Loses?", Working Paper No. 2, Takshashila Academia of Economic Research Limited, Mumbai, India. Available at: http://www.taerindia.com/pdf/Working_paper_no_2.pdf.

Hallren, R. and D. Riker (2017), "An Introduction to Partial Equilibrium Modeling of Trade Policy", Working Paper 2017-07-B U.S., U.S. International Trade Commission, p.25.

Reddy, A.A.; C.R. Rani, and G.P. Reddy (2011), "Policy for Edible Oil Complex in India Under WTO Regime", *Journal of Rural Development*, Vol.30, No.1, pp.11–24.

Srinivasan, P.V. (2005), "Impact of Trade Liberalization on India's Oilseed and Edible Oils Sector" Report prepared for IGIDR-ERS / USDA Project: Indian Agricultural Markets and Policy.