Processed Food Export from India to European Union: Trend and Potential

by Renjini V.R., Venkatesh P., Nithyashree M.L., and Alka Singh

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Abstract

The study has examined the trend, potential and the issues in export of processed food from India to the European Union (EU) based on the secondary data for the period 2005 to 2019. India exports around 12 per cent of processed food to EU and export has registered a real growth rate of 5 per cent during the study period. Netherlands is the major destination of among EU countries and fisheries products are the major items among processed food products. India still has to achieve the export potential in major products like crustaceans and its preparations,tea,vegetable oils, and oil cakes eventhough they exhibits comparative advantage in EU market. India do not have comparative advantage in fruit juices,cereal preparations and vegetable oils in the EU. Strigent product standards of EU are affecting India's exports especially in fisheries products, animal feed, fruits and vegetable preparations as indicated by the rejection analysis. The recent reforms initiated by the government for the compliance of EU product standards are in right directions. The trade facilitation and good agricultural and manufacturing practices at the farm and firm level are important in order to harness the export potential and increase market share in EU.

JEL Codes: *Q170, Q100, F130* *#19376*

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Key words: *processed food, export potential, European Union*

Introduction

The food processing sector has recently received attention within the framework of export-led industrialization in developing countries (Wilkinson, 2008). The increased wealth, higher purchasing power, changed food habits had resulted in demand for processed food especially in developed countries (Athukorala and Jayasuriya, 2003; Godfray *et al*, 2010; Euromonitor International, 2012). The technological advancement in food processing, improvement in cold storage and transportation facilities, contract farming and supermarket revolution has resulted in greater supply of processed food in the global market (Suanin, 2020). This is becoming an

opportunity for the agriculture resource country like India to attain export potential in the sector.

Agricultural production in India has been consistently increased and diversified over the years owing to different policy measures and technological progress. The abundant production of food crops and increased demand for high value crops, provides base for development of food processing industry in India. The food processing industry is a sun rising industry in India which has emerged as a high-growth potential sector due to its immense scope for value addition. The food processing sector in India has been growing at an average annual growth rate of around 10 per cent during the last 5 years ending 2018-19. The sector has contributed 8.98 per cent and 11.11 per cent of GVA in manufacturing and agriculture sector respectively in 2018-19 (MoFPI, 2020). The Department of Commerce and Industry in its Agricultural export policy, has identified processed food sector as the key segment for doubling India's agriculture export by 2022. Incidentally, around half of India's agricultural export earning is contributed by processed food products reiterating the importance and potential of the sector.

The European union is the largest importer of food products in the world (Sunain, 2020) and it is one of the largest export markets for agricultural products from India. More than 40 per cent of India's export of fruits and vegetable preparations are directed to EU countries. Around 10 per cent of fish products and coffee and tea preparations from India are exported to EU. Despite being the largest destinations, Indian agricultural products have been facing rejection and export bans in the EU due to standards related to food quality, safety and health (Mukherjee et al, 2019). In this context, this paper attempt to provide a detailed analysis of trend, potential and issues in export of processed food export from India to EU.

Data and methodology

For our study, we followed the classification given by Kohpaiboon (2006) and Jongwanich (2009) to define processed product. The list of selected products is given in appendix. We have included Unite Kingdom in our analysis as our study period and data are before Brexit regime. The data for selected processed products are collected and compiled at four-digit HS code classification from UNCOMTRADE for the period 2005 to 2019. To find trend in export of processed food, values were deflated with United States GDP Deflator with base year 2012. We have identified products having more than one per cent share in export within the product groups in order to analyse the export potential. Export potential is defined as the lower value between the country's global exports and the partner country's global imports, minus the actual trade between the two countries for a year. It considers exports and imports as the country's supply and demand potential, respectively. The formula is:

$$\text{Export potential} = \text{minimum}(\text{India's global export}, \text{EU global import}) - \text{actual export}$$

The indicator explains the maximum possibility of trade between the two countries relative to the actual trade and it do not consider supply side constraints in export (ITC, 2014: Decreux and Spies,2016).

The export potential of products should be complemented with the analysis of export competitiveness of the products. If the products are exhibiting the export potential in the EU market but are less competitive, we need to find out the ways to improve their competitiveness. Revealed Comparative Advantage (RCA) index is one of the widely used competitiveness indicators in international trade (Balassa, 1965). Through this measure we can identify the extent to which India has a comparative advantage or disadvantage in a commodity with respect to competing countries. RCA value greater than one indicate the competitiveness of the commodity in the EU market. The index is:

$$\text{RCA Index} = \frac{X_{ij}/X_{ik}}{X_{nj}/X_{nk}}$$

Where,

X_{ij} = Value of exports of country 'i' of commodity 'j'

X_{ik} = Value of exports of country 'i' of a set of commodities 'k'

X_{nj} = Value of exports of a set of countries 'n' of commodity 'j'

X_{nk} = Value of exports of a set of countries 'n' of a set of commodities 'k'

Indian products which are having higher demand in the international market often fails to pass stringent product standards in EU. The rejection analysis will provide some insights into the trend and reasons for rejection of the commodities and the non-compliance of EU standards by India. The rejection data from EU countries were taken from Rapid Alert System for Food and Feed (RASSF) website for the period 2005-2019. The rejection data reported provides a broad picture of patterns and trends across products, exporting countries and destination markets, and also reflect changes in the volumes of exports over time. The unit rejection is defined as number of rejections per US dollar per million of export were calculated for recent ten-year data. This measure takes account of changes in the volume of exports such that it provides a direct measure of the rate of non-compliance (Henson and Olale, 2010). The formula is:

$$\text{Unit Rejection Rate(URR)} = \frac{\text{No. of rejections}}{\text{The US 1 million of exports}}$$

Similar to URR, Relative Rejection Rate (RRR) is calculated for the ten-year period. The RRR provides a very broad initial indicator of both the degree to which countries struggle with compliance and the specific areas where problems are most acute (Geetha *et al*, 2020). The formula is:

$$\text{Relative Rejection Rate(RRR)} = \frac{R_{ij}/R_{it}}{M_{ij}/M_{it}}$$

R_{ij} = import rejection of country i by country j

R_{it} = total import rejection of country j

M_{ij} = imports of country i to country j

M_{jt} = total imports of country j

A country whose share of rejections is less/more than its share of imports is defined as a relatively good/bad performer in terms of rates of non-conformity (Henson and Olale, 2010). The relative rejection ratio can be expressed as the ratio of natural logarithm of share of rejections to share of import. Higher log ratio indicates poorer performance in the compliance of standards in the exporting market relative to competing countries. Here, we have calculated and compared the URR and RRR of processed food products for India and its major competitor China in the EU market.

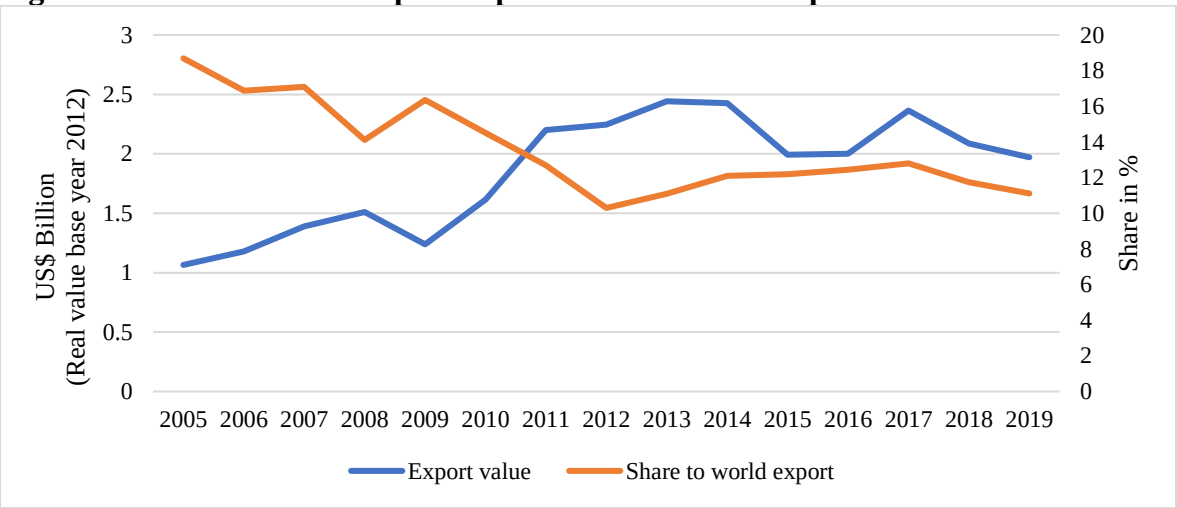
Results and Discussion

Trend and pattern of processed food export from India

There has been a shift in global preferences towards consumption of high value agricultural and processed food commodities (Varma and Issar, 2016; Singh *et al*, 2012). The share of processed food export to total food export has increased to 60 per cent from 1980s to early 2000s major chunk of which are shared by developed countries including EU (Jongwanich, 2009). India has been benefitting from these changes due to its impressive growth in production and export of high value agricultural products. India's export of processed food to the world has been increased by 5 times over the period 2005-19. However, India's presence in world processed food export market is meagre. The share of processed products in the world export

marginally increased from one to two per cent during 2005-2019. The trend in export of processed food export from India to EU is given in figure 1. The export of processed food products has increased by three times from US $ 796 million in TE 2005 to US $ 2354 million in TE 2019.

Figure 1: Trend in India's export of processed food to European Union 2005-2019



The processed food export from India to EU has registered a growth rate of 5 per cent in real term for the period 2005 to 2019. But, share of EU in India's world processed food export has consistently reduced over this period. During TE 2005, the export share was around 16 per cent which has reduced to 12 per cent in TE 2019. On the other hand, real export growth of processed food products from India to world has been increased by 10 per cent during this period. This indicates that, India's processed food products export has been diversified to markets like United States and Asian countries. For instance, United States has been emerging major importer of fisheries products, processed fruits and vegetables, cereal preparations, animal feed, tea, coffee and other non-alcoholic beverages, etc. South Asian and Gulf countries form major beneficiaries of fisheries products, meat products and cereal preparations. The stringent EU standards could also be the reason for Indian exporters to shift their export to less stringent market like Asia.

Product group wise status of export shows that fisheries products contributes significantly in the export of processed food to EU with 43 per cent share during TE 2019 (Table 1). Even though its absolute value has been increased by more than three times, its share in total processed food export has been reduced during this two time period. India has been a net exporter of fisheries products to EU and major portion of fisheries export is constituted by frozen shrimp. Vegetable oils is the another major processed food exported to EU constituting around 14 per cent share during TE 2019. Sesame oil, castor oils which are having major use in pharmaceutical industry are the major exported oils to EU.

Table 1: Processed food products export from India to EU

Product category	**TE 2005**		**TE 2019**	
	Value (Million US$)	Share (%)	Value (Million US$)	Share (%)
Fish products	371.82	46.68	1008.42	42.84
Meat products	13.60	1.71	0.06	0.00
Dairy & poultry products	9.53	1.20	5.02	0.21
Cereal preparations	15.25	1.91	43.49	1.85
Processed vegetables	33.32	4.18	169.07	7.18
Processed fruits	13.24	1.66	105.03	4.46
Coffee, tea and cocoa products	115.44	14.49	234.08	9.94
Animal & Vegetable oils	112.13	14.08	328.89	13.97
Other edible products	86.59	10.87	190.04	8.07
Beverages	1.79	0.22	24.09	1.02
Residues and animal feed	7.88	0.99	220.34	9.36
Sugar preparations & honey	15.98	2.01	25.58	1.09
Total	796.58	100.00	2354.10	100.00

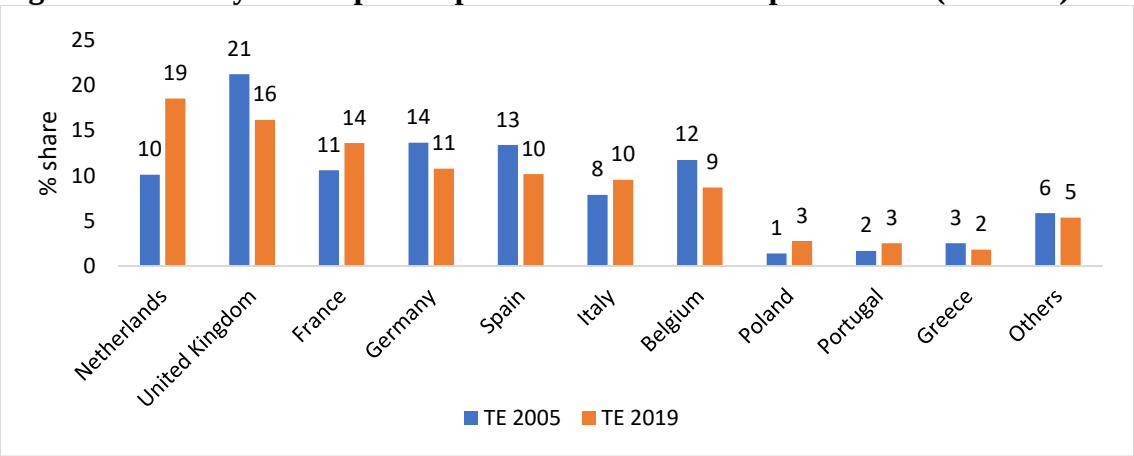
Figures in parentheses are percent share to total

Over the years, absolute value of export of coffee, tea and cocoa product has been increased but their share has been reduced from 14 per cent to 10 per cent. On the other side, export of residue and animal feed has registered tremendous increase contributing 9 per cent in processed

food export during TE 2019. Export of meat products mainly consists of poultry products including eggs which has been reduced drastically over the years which is mainly due to the stringent quality specification laid out by EU.

The country wise export status shows that around 60 per cent of India's processed food trade is with Netherlands, United Kingdom (UK), France and Germany. Presence of Rotterdam Global Hub which is a leading European hub for global and intra-European cargo flows in Netherlands could be one of the reasons for higher import from India as well as other countries (Sunain, 2020). The share of Netherlands has increased from 10 per cent in TE 2005 to 19 per cent in TE 2019 while that of UK has decreased from 21 per cent to 16 per cent during the same period. Export share of France and Italy has increased overtime while that of Germany, Spain and Belgium has decreased over time. The countries like Germany, Italy, and Spain constitutes 10-11 per cent share in India's processed food export. Remaining countries like Poland, Portugal and Greece constitutes 2-3 per cent share of processed food export.

Figure 2: Country wise export of processed food to European Union (% share)



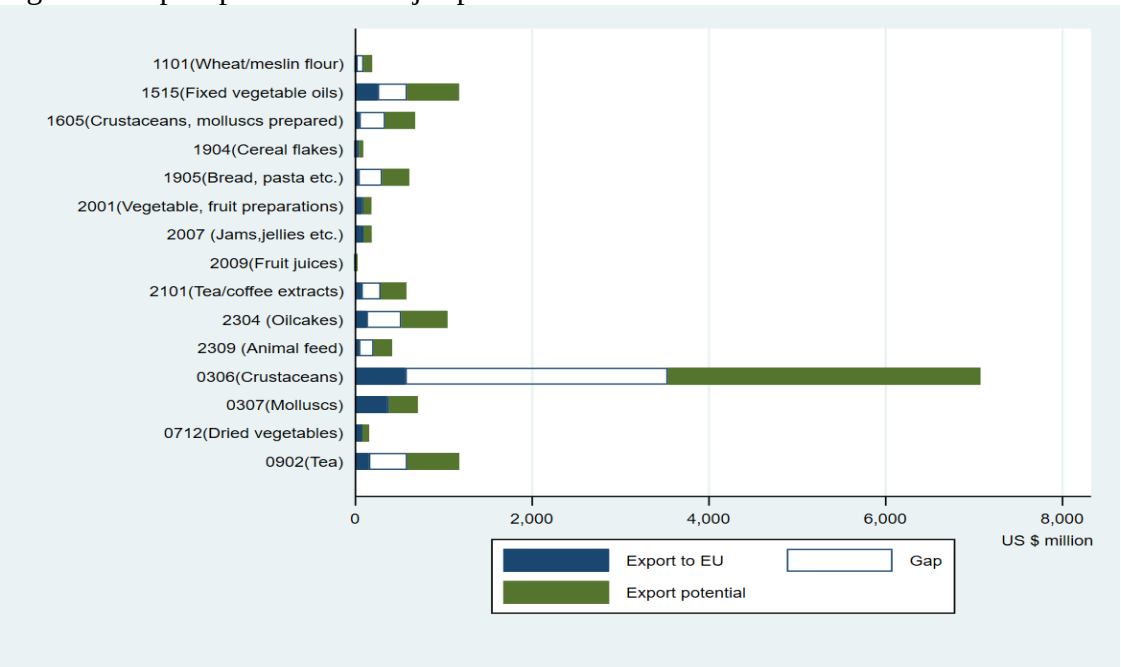
Animal and vegetable oils are the major export items to Netherlands followed by fisheries products and fruits preparations. These three product groups together constitutes more than 70 per cent of processed food exports to Netherlands. Exports to United Kingdom mainly consist of 40 per cent of fisheries products, more than 10 per cent of processed vegetables, coffee, and tea products. In the case of France, around 80 per cent of export is constituted by fisheries

products, animal and vegetable oils and residues and animal feed. Export to Germany are dominated by residues and animal feed,followed by coffee and tea preparations(>20 % share each) and fisheries products.

Export potential of processed products

The export potential of top 15 processed products based on export values during TE 2019 were calculated and given in the figure 3. Among these, crustaceans such as shrimps, prawns etc. exhibits higher export potential. India is currently realising only 15 per cent of export potential of crustaceans. EU is one of the major importers of shrimps in the world along with United States and Japan. Countries like China, Thailand, Ecuador and Bangladesh are the major exporters of shrimp to EU. Similarly, preparations from crustaceans and molluscs realise around 12 per cent of the export potential. Around 40 per cent of export potential only realised in vegetable oils which is one of the major export products from India.

Figure 3: Export potential of major products



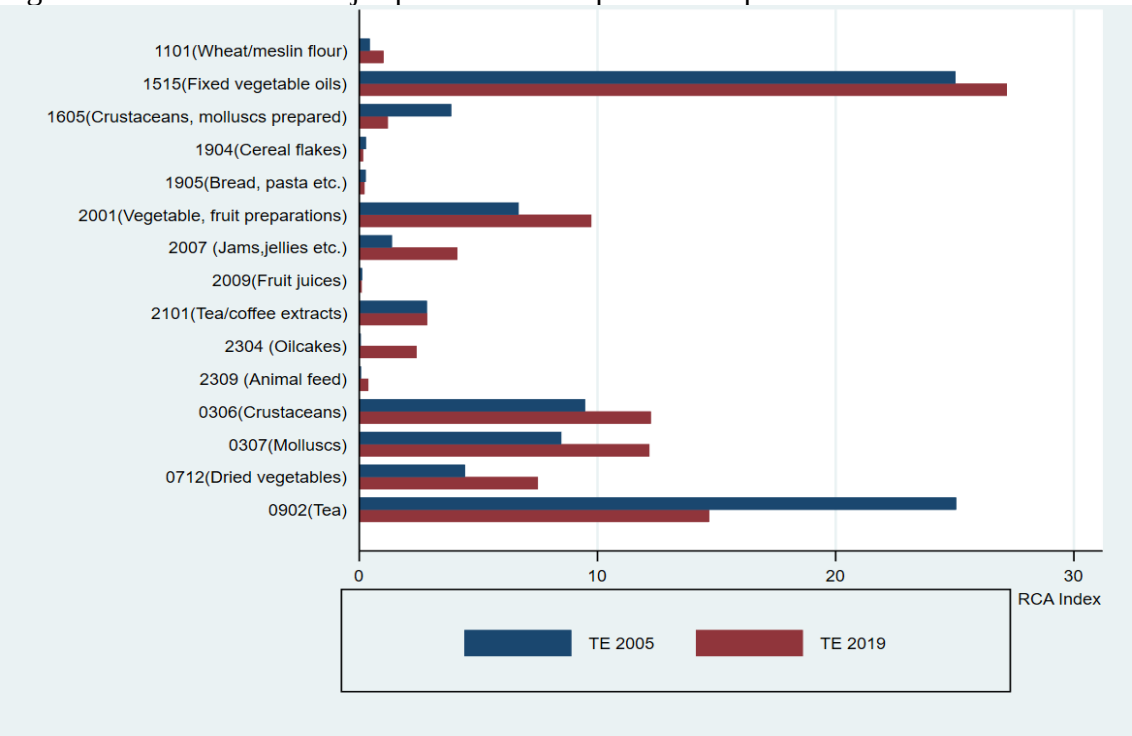
Other major exporting commodities like oil cakes, animal feed and tea have realised only 20-25 per cent of the export potential, while that of cereal products like wheat flour, bread etc.

have realised around 10 per cent of the export potential. The commodities like processed vegetables and molluscs have relatively higher realisation of export potential in the EU market. Germany, UK, Netherlands and France are the major importers of processed vegetables from India.

Competitiveness of processed products

Analysis of export potential doesn't consider the supply side constraints faced by the exporting countries. India's ability to compete with other competitor countries in the EU market can be explained by the RCA index. When we examine the competitiveness of selected processed products in the EU market, most of the products have improved the export competitiveness over the two periods (Figure 4).

Figure 4: RCA index of major processed food products exported to EU



Among the products, vegetable oils exhibit higher comparative advantage (RCA index >20) followed by tea, crustaceans and molluscs (RCA index >10). RCA index for fruits and vegetable preparations, jams and jellies, oil cakes, vegetable oils, crustaceans and molluscs and dried vegetables have increased over the period. However, the competitiveness of fish

preparations, tea, has decreased over the period. There is no comparative advantage in export of cereal preparations like wheat flour and bread, and animal feed. This should also be related to the fact that India's export of cereals preparations to EU has decreased while that of animal products have increased over time. So, India should focus more on animal feed for attaining competitiveness in the EU market.

Rejection of food commodities by EU from India

There has been an increase in trade of fresh and processed food on the world as a result of the demand in developed countries. At the same time, growing public awareness and preference for safe and hygienic food in the developed countries leading to the stricter Sanitary and Phyto Sanitary regulations and standards. These requirements have often acted as significant market access barriers for exports from developing countries (Das, 2013). Producing for export also requires sensitivity to the changing demand scenario in the world market, which, in recent times, is greatly influenced by food safety standards. (Mehta and George, 2005). It has been reported that Indian agricultural and processed food exports are being rejected in key developed markets like EU (Chaturvedi and Nagpal, 2003; Mehta, 2005; Chaudhari *et al*., 2012). The product standards and trade policy of the importing country will have a direct effect on the export potential and export competitiveness of products.

The European Union (EU) food legislation has developed tremendously over the years to respond to growing concerns with respect to food safety, consumer information, and the functioning of the internal EU market (Wijnands *et al*, 2008). The EU RASSF portal maintains notification about the violation in three forms: alerts, information, and borer rejection. Alert notifications are being sent when food or feed products circulated in one or more member countries not complying with the set standards and immediate action is required. Information notifications are given when the product has potential risk but the product is not on the market

at the time of notifications and the risk is not considered very serious. Border rejections relate to the high-risk products that are rejected by the member countries. This information will be immediately circulated to all the member countries of the EU to ensure that the rejected product does not re-enter the borders of any member countries through another country's border. In this study analysis were done based border rejection data only.

During the period 2005 to 2019, highest number of rejections by EU were found for animal feed and fisheries product (Table 2). This shows that, even though animal feed is one of the potential export products, India is not able to conform the product standards laid out by EU. Major reasons for rejection of animal feed from EU are presence of aflatoxin and salmonella which constitutes around 97 per cent of the rejections. Presence of risk material like body parts of other animals and fraudulent health certificate are the remaining reasons for rejections. Presence of nitrofuran is the major cause of rejection of the fisheries products with more than 40 per cent share in total fisheries rejections followed by bad temperature control (20%), presence of cadmium and bad packaging and hygiene (11 %). Infection by bacteria like Salmonella and unauthorised use of colour and other additives 7 per cent of the reasons for rejection of fisheries products. Besides that, presence of unauthorised colour additives and other substances constitutes 4 per cent of the reasons for rejection of fisheries products. Coffee, tea and other non-alcoholic beverages are the next products groups which faced the greatest number of rejections from EU. Presence of pesticides in tea and coffee constitutes 74 per cent of the reasons for rejection followed by unauthorised use of colour additives. The presence of aflatoxins and use of colour and preservatives were found to be major reasons for rejection of cereal preparations, food additives and confectionery products. Even though higher number of rejections are occurring in fresh fruits and vegetables, rejections were relatively low for the processed fruits and vegetables.

Table 2: Rejection of processed food products exported by India 2005 to 2019

Product group	EU(No.)	Major reasons for rejection
Animal feed	303	Presence of aflatoxin (60%), Presence of Salmonella (37%), Presence of risk material and fraudulent health certificate (3%)
Fisheries product	226	Presence of nitrofuran (47%), Bad temperature control (20%), Bad hygiene improper packing (11%), Presence of Cadmium (11%), Presence of salmonella& other bacteria (7%) unauthorised use of colour &other substances (4%),
Coffee, tea and other non-alcoholic beverages	27	Presence of pesticides (anthraquinone, triazophos, monocrotophos, propargite) in tea and coffee (74%), Unauthorised use of colour (26%)
Confectionery	16	Unsafe colour additives (62%), Presence of aflatoxin 19%), Presence of salmonella and absence of health certificate (19%)
Food additives/ seasoning material	24	Presence of aflatoxin and insects
Fruits and Vegetable preparations	7	Absence of health certificate (50%), Presence of aflatoxin (33%), higher content of preservatives (17%)
Cereal preparations	3	Presence of aflatoxin (86%), Absence of health certificate (14%)

The unit rejection rates (URR) provide direct value of rate of non-compliance. The rejection rates were calculated and compared with China, one of the major competitors to India. China who is an important player in international market, occupies around 6 per cent share in world processed food trade. India accounts around 2 per cent of world processed fruit and juices export while that of China is around 12 per cent. So, URR of India and China for the selected product groups were calculated and presented in Table 3. In the case of India, among all the categories, animal feed has relatively higher unit rejection rate from EU followed by tea, coffee

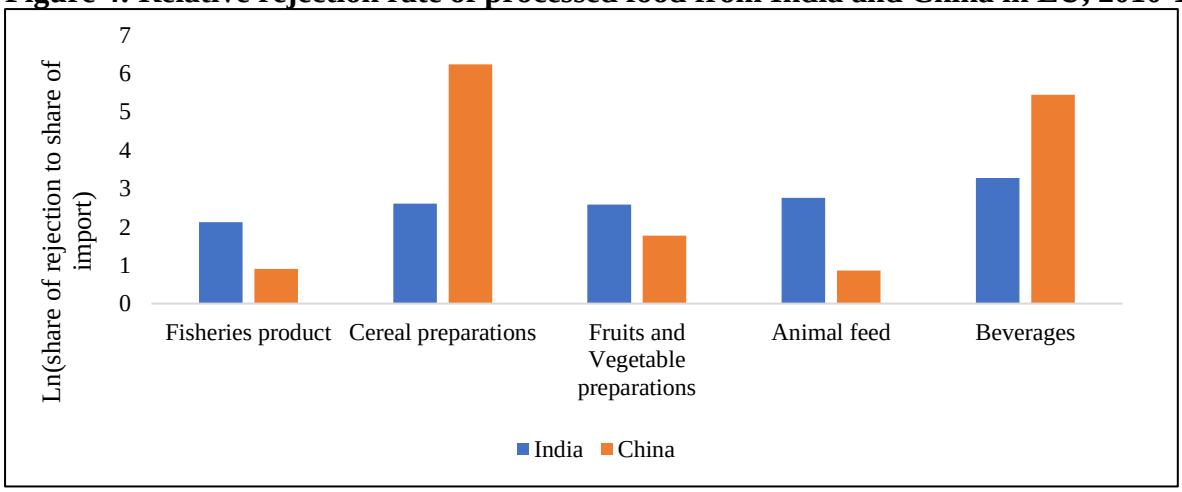
and other non-alcoholic beverages. When we look at the unit rejection rates for China, cereal preparations, tea, coffee and non-alcoholic beverages have exhibited higher rejection rates.

Table 3: Rejection rate of processed food products exported to EU during 2010-19

Product group	Unit rejection rate	
	India	China
Fisheries product	0.018	0.007
Cereal preparations	0.007	0.323
Fruits &vegetable preparations	0.003	0.001
Animal feed	0.769	0.005
Tea, coffee & other non-alcoholic beverages	0.011	0.119

For the better understanding of non-compliance in related to competing country, relative rejection rate was calculated and presented in figure 4. The rate is expressed as log ratio and higher the rates higher the non-compliance. India has exhibited poor performance in following EU standards in fisheries products, fruits and vegetable preparations and animal feed as compared to China. Whereas, China didn't conform to the EU standards in cereal preparations and beverages as compared to India.

Figure 4: Relative rejection rate of processed food from India and China in EU, 2010-19



In order to expand the export and to reduce the compliance cost and rejection, we need to focus at product and firm level. The recent policy initiatives by the Government and are welcome steps to promote the food processing industry and its export promotion. Indian government had introduced many measures to address the Sanitary and Phyto Sanitary issues faced in the developed markets especially EU. Export Inspection Council of India, Agricultural and Processed food Export Development Authority (APEDA), Marine Products Export Development Authority (MPEDA), Food Safety and Standards Authority of India (FSSAI), Bureau of Indian Standards (BIS) are working to facilitate standard compliance at producer and exporter level. More emphasis should be given for Good Agricultural Practices, Good Manufacturing Practices for compliance of standards relating to products at national and international level.

Conclusions

The EU continues to be a major export destination for India's processed foods constituting around 12 per cent share of India's world processed food export. The growth in processed food export to EU was very impressive a real growth rate of 5 per cent during the study period indicating further potential in export. India needs to focus on fisheries products, animal feed, coffee and tea preparations and processed vegetables to achieve their full export potential in EU. Strigent product standards by EU are affecting India's exports of fisheries products, animal feed and fruits and vegetable preparations as compared to China. The efficiency in trade facilitation and standard compliance at the farm and firm level is important to harness the export potential and increase market share in the developed countries markets like EU.

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APPENDIX

List of selected processed food products

Product group	**HS code**
Fish products	03+1604+1605
Meat products	02+1601+1602+1603
Residues and animal feed	23

Sugar preparations &honey	1701+1702+1704+0409
Coffee, tea and cocoa products	902+903+1803+1804+1805+1806+2101
Animal &Vegetable oils	15
Cereals preparations	1101+1102+1103+1104+1107+1108+1109+1904+1905
Processed vegetables	0712+1105+1106+2001+2002+2003+2004+2005
Processed fruits	0811+0812+0814+1903+2006+2007+2008+2009
Dairy & poultry products	0401+0402+0403+0404+0405+0406+0407+0408
Beverages	2203+2204+2205+2206+2207+2208+2209
Other edible products	0410+13+1901+1902+2102+2103+2104+2105+2106

Adopted from Kohpaiboon (2006) and Jongwanich (2009) and MoFPI, GoI