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THE POSITIONING AND PERFORMANCE OF ORGANISED FOOD PROCESSING INDUSTRY IN INDIA- A NATIONAL AND SUB-NATIONAL LEVEL ANALYSIS

Sibin Jerry Thomas[*] and Malini L Tantri [**]

Abstract

The Food Processing Industry (FPI) plays a significant role in the pursuit of doubling the income of farmers and providing employment to the large labour base of the country.This requires a detailed and systematic understanding of the sector and course correction wherever required.It is againstthis background, through descriptive statistics, this study examines the performance of the food processing industry at both the aggregate and disaggregate levels.The analysis across phases based on ASI data for the period 1990-2020 helps us to argue that (a) although the industry has been on a growth path since the reforms in the agriculture sector were undertaken after 2000, there exists a varying pattern of size and development within the industry at the sub-category level. (b) Even though the food processing industry has a huge share in the majority of Indian states, there is a regional imbalance in the level of development of the industry, with certain states being exceptional performers while other states lag. (c) This, among others, is due to the availability of raw materials, consumer base, infrastructure, and logistics facilities, as well as the policy support provided in the form of incentives and grants to the units in the industry.

Introduction

India is the fourth-largest producer of agricultural products worldwide.In particular, it is a leading producer in a large number of agricultural products such as milk, ghee, banana, guava, papaya, and mango, and ranks second in the production of rice, wheat, fish, and many other fruits and vegetables (FAOSTAT 2020; Government of India 2019–20).The increase in market access in international trade for the agriculture sector is expected to have a positive influence on the development of the sector and also in reducing the poverty trap of people depending on thesector for livelihood (Raju, 2014). Not surprisingly, recent years have seen tremendous emphasis on boosting agri-exports, especially high-value-added exports (Agriculture export policy, 2018). Boosting the agri-export of value-added products is possible only if the food processing industry is performing effectively and efficiently, along with a good harvest.Thus, it is very important to examine the status of the Indian food processing industry at both national and sub-national levels.

Given its rich and diverse raw material base, India has the potential to become one of the largest food-processing countries in the world.Geographical proximity to large food-importingcountries also places India in an advantageous position compared to its competition.However, the extent of

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[1] Manufacture of other food products (107) includes the following products: bakery products (1071), sugar (1072), cocoa, chocolate and sugar confectionery (1073), macaroni, noodles, couscous and similar items (1074), prepared meals and dishes (1075) and other food products n.e.c (1079)

processing done on agricultural products is very low in India. The country processes less than 10 per cent of its agricultural output (around 2 per cent in fruits and vegetables, 6 per cent in poultry, 21 per cent in meat, 23 per cent in marine products, and 35 per cent in milk), and most of the processing is categorised as primary processing (FACE–CII, 2019).

In terms of the growth and performance of the food processing industry in India, Ali et al. (2009) found that during the period, 1980-2002, the industry experienced an improvement in various sub-segments of the industry, especially in the high-value-added segments. These improvements are in terms of the number of units, employment generation, GVA, total factor productivity and increased capital intensity. Baliyan et al. (2015) show that the food processing industry has been on a growth path in the period 1981-2010, covering pre-liberalisation to the globalisation stage with an increase in total factor productivity, value addition and output. However, wages declined between 2000 and 2010.Kumar et al. (2015) have also studied the performance of the food products industry for the period 2000-2010 at both the national and state-level. At the national level, the decade witnessed steady growth in the industry, with the formal sector gaining more prominence than the informal sector. The paper also estimated the share of GVA and productivity by states by looking at products at a disaggregate level (NIC 3-digit level) to reveal the top-performing states in various sub-segments of the industry. Shelly and Kaur (2015) also studied the performance of the industry in terms of its contribution to GDP and growth of FDI for the period 2000-2013, with results indicating high growth rates during the period and also increased FDI inflow. However, the literature lacks a comprehensive study on the organised food processing sector's growth and development in the recent period and the recent studies have only looked at the disaggregate (sub-sector) level performance and growth of the sector. Therefore, this paper will address this by providing a descriptive analysis of the organised food processing sector regarding its share in gross value added, output, employment provided, and investment at the aggregate and disaggregate level for the period post-liberalisation 1991 to 2020 both at the aggregate and disaggregate levels. The study period is divided into three phases to better understand the performance of the industry; 1990-2001, which is the first phase of liberalisation; 2001-2011 which is the globalisation phase where reforms specific to the agricultural sector were initiated and finally 2011-2020, which is the period following the global financial crisis when economies started to rebuild.

The data on performance and position of the organised food processing industry are taken from the Annual Survey of Industries (ASI) database for both national- and state-level data.Data are also sourced from the Ministry of Food Processing Industries (MoFPI), National Account Statistics, Central Statistics Office (CSO), National Sample Survey Office (NSSO) and the Department for Promotion of Industry and Internal Trade (DPIIT).The Annual Survey of Industries (ASI) is the primary data source for the organised food processing industry. The ASI database at two- and three-digit NIC codes is adopted for this study. The food processing industry is covered under NIC codes 10,11 and 12 (NIC 2008); for NIC 1998, the codes are 15 and 16, covering food products, beverages, and tobacco.

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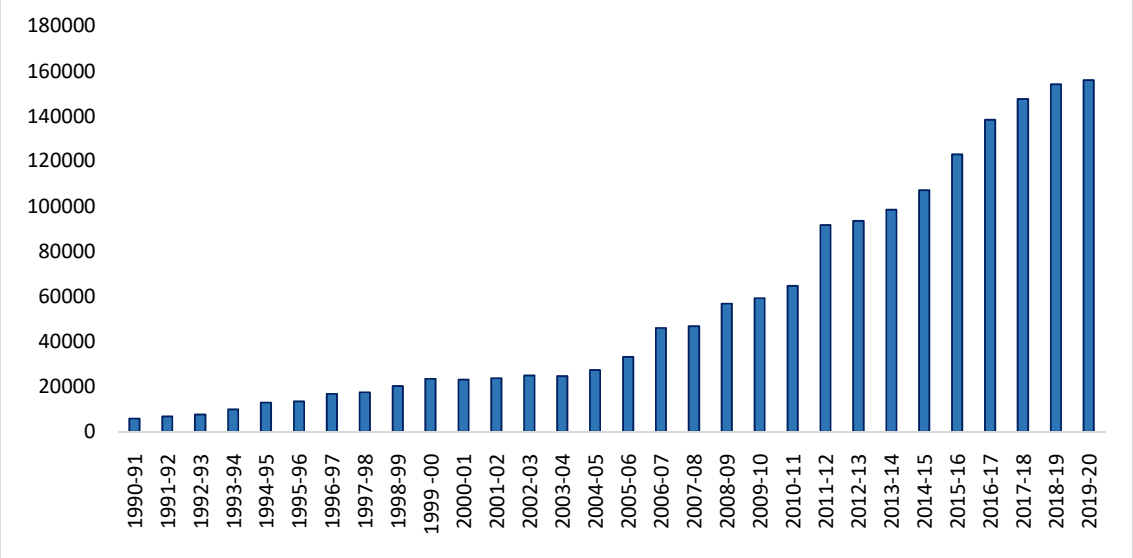
The rest of the paper is organised as follows: The following section outlines the performance and position of the organised food processing industry in the Indian economy by looking at key characteristics at the aggregate and disaggregate levels.This section also discusses what explains the results through the policy analysis framework.The last section summarises this paper.

Organised Food Processing Industry- National level

The food processing industry has a dualistic structure, with a largely unorganised sector and a relatively small organised sector in terms of the number of enterprises and employment generation.However, in terms of gross value addition, the unorganised sector accounted for only 27.7 per cent of gross value added from the industry in 2015-16 (NSS 73rd round). The organised sector on the other hand contributed 72.3 of GVA from the industry in 2015-16(Annual Survey of Industries). Thus, it is clear that the organised sector is the largest contributor in terms of value-added from the industry, even though its share in the number of enterprises and employment is low.This indicates that the organised sector of the industry is more efficient in terms of converting inputs into output using available resources, as empirically established by Trivedi et al. (n.d.).In addition, with the increased emphasis on high-value-added agricultural exports, it is important to focus on the performance of the organised food processing industry, whose development will have a direct impact on agricultural exports.

Figure 1: Trend in GVA by organised food processing industry: 1990-91 to 2019-20(₹ crore)



Source: Annual Survey of Industries

The study of the growth rate of gross value-added reveals that in the first decade of economic liberalisation (1990-2000), the food sector did not take off as expected (Figure 1) as there was no direct emphasis on the agriculture sector in the new policy framework.However, it was expected that the changes in trade and exchange policy, reduced protectionism, and other liberalisation measures would

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improve the terms of trade for agriculture and thereby boost exports from the sector (Bhalla and Singh, 2005).Despite the policy measures, the agriculture sector did not experience significant growth during the period in terms of GVA, thereby affecting the food processing industry. In the latter part of the decade, however, the industry experienced growth in terms of gross value-added, investment resulting in high growth figures for the whole decade, which may be attributed to the signing of the WTO agreement on agriculture.The organised sector contributed 9.6 per cent of the manufacturing GVA in 1990-91, which grew to 12.9 per cent in 2000-01. In terms of the growth rate of GVA in the organised sector, the period 1990-2000 saw a CAGR of 14.8 per cent which was higher than the manufacturing GVA growth rate of 11.8 per cent (Table 1).

Table 1: Organised food processing industry in India: compound annual growth rates in percentage

	1990-2000		2000-2010		2010-2020	
	FPI	Manuf.	FPI	Manuf.	FPI	Manuf.
Gross value added	14.8	11.8	9.9	14.6	7.7	6.4
No. of factories	-0.4	1.8	1.4	1.9	1.3	1.4
Employment	1.4	-0.1	1.1	4.0	1.8	2.5
Output	14.2	12.7	14.3	14.9	10.2	9.5
Investment	15.7	11.3	10.5	13.0	6.8	7.2

Source: Annual Survey of Industries

The decade 2000 to 2010, witnessed increased growth in the Indian food sector (organised and unorganised) with a decadal growth rate of GVA at 9.9 per cent, the highest in the last three decades. The share of the food processing sector in manufacturing GVA and total GVA increased to 12.7 per cent and 2.3 per cent respectively in 2010-11 (India KLEMS). The organised food processing industry grew at 9.9 per cent in this period; however, this was lower than the manufacturing GVA growth rate (Table 1).As argued by Trivedi et al. (n.d.), this may be attributed to the fact that most industries had strong backward linkages with other industries that were all growing at high rates at the time, whereas the food processing industry had backward linkages with agriculture, which during the decade did not grow as fast as the manufacturing sector.

The rising population, increased urbanisation, increased income, and changes in consumption patterns meant that the demand for food products was high (FAIDA Report, 2013).The period also saw shifts in production patterns and increased productivity.Production shifted from basic food grains to high-value products, such as fruits and vegetables.The movement of labour from agriculture to non-agriculture activities and the increase in cultivation area led to an increase in productivity and production of the sector (ibid.). It was during this period that the sector got increased policy attention. The percentage of plan expenditure outlay for the agriculture sector rose from 5.2 per cent in the 10^{th} Five-Year Plan to 5.6 per cent in the 11^{th}FYP (Five-year plan report). There was also the relaxation of FDI rules towards the sector and the resulting inflow of foreign capital into the sector. Also, it was in this period that the government identified the importance of the sector and introduced the Rashtriya Krishi Vikas Yojana (RKVY) in 2007, envisaged the setting up of mega food parks, and undertook investment measures in the sector (Government of India, 2008-09).

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In the last decade, the food sector has continued to grow at a slower pace than in the previous decade.The contribution of the sector to the GVA of manufacturing was 10.8 per cent while contributing 1.9 per cent to the total GVA.The organised sector contributed 10.5 per cent of the GVA in organised manufacturing, with the GVA growing at a rate of 7.7, which was higher than the growth of the organised manufacturing sector (Table 1).The organised food processing industry contributed 61 percent of the total value added in the sector with a GVA of ₹1,54,224 crores (India KLEMS).

At the disaggregate level, the *manufacture of other food products (107)*[1]is the highest contributor to GVA in the industry with ₹51,27,427 lakh gross value added, which comprises 33.3 per cent of the total GVA from the industry in 2019-20 (Table 2).However, the subsector has had a higher share in GVA over the years, accounting for 45.3 per cent of GVA in 1990-91, indicating that the sector has declined in performance relative to other subsectors.*Manufacture of grain mill products, starches, andstarch products (NIC 106)*was the second highest contributor to GVA, with a share of 12.1 per cent.*Processing and preserving of meat and meat products (101)* and *manufacture of prepared animal feed (108)* have the lowest contribution towards GVA from the industry with 1.3 per cent and 3.2 per cent shares, respectively; however, both these sub-sectors have increased their share over the years (Table 2).

Number of factories

To provide a better understanding of the importance and size of the industry, we need to examine the industry in terms of the number of factories and the growth rate of the industry over the years.In terms of the number of factories, the food processing industry has the largest number of factories among all industries, constituting 18.2 per cent of the total number of factories in operation across industries in 2019-20. The number of factories increased from 27,809 in 1990-91 to 44,854 in 2019-20. However, the share of enterprises in FPI to total industries declined from 1990, when it accounted for 25.2 per cent in 2020, and the FPI constituted only 18.2 per cent of the total enterprises in the manufacturing industry (Table 1).This is because the total number of enterprises across manufacturing grew at a higher rate than that of FPI.In comparison with overall manufacturing, in the period 1990-2000, the first phase of liberalisation, the food processing industry grew negatively (-0.4 per cent), with a decrease in the number of factories when the manufacturing sector as a whole grew at 1.8 per cent.This may partially be attributed to the large number of factories *manufacturing tobacco* ending operations during this period (Annual Survey of Industries, 1995-96). Despite the decline, the sector improved its performance in terms of value-added output in the period.In the subsequent periods, the number of factories in the FPI grew at rates similar to those of the overall manufacturing industry, although the FPI performed worse than the manufacturing sector throughout the period.Thus, other sectors set up a greater number of enterprises than the FPI during this period. This, among others, could be attributed to the relatively poor performance of the food processing industry in terms of technical efficiencyand total factor productivity growth in comparison to other manufacturing industries in the period 1990-2005 (Trivedi et al., n.d).

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The number of factories in the FPI at the disaggregatelevel (NIC 3- digit) describes the share of sub-sectors of the industry in the total number of factories and the growth rate (Table 2), *and the manufacture of grain mill products, starches, and starch products (106)* has the largest number of factories in the organised FPI with 45.6 per cent of the total number of factories in the industry. This was followed by *the manufacture of other food products (107)* with 10,802 factories, which constituted 24.5 per cent of the total factories in the FPI. Thus, the sub-sectors with the highest GVA contribution are also the sectors with the largest number of factories, although the *manufacture of other food products* contributes more to the GVA from the industry while having a lesser share in the number of factories than *the manufacture of grain mill products, starches, and starch products*sub-sector, indicating higher GVA per factory. *Processing and preserving of meat and meat products (101)* have the lowest number of factories in the industry, with 153 units in 2019-20, followed by *processing and preserving of fish and fish products (102)* and *manufacture of prepared animal feeds (108)*. These sub-sectors are also the lowest contributors in terms of gross value-added from the industry. Except for *the manufacture of vegetable and animal oilsand fats (104), manufacture of grain mill products, starches, and starch products (106),* and *manufacture of tobacco products* (110), all other sectors have increased their share in the total number of factories in the industry.

Table 2: Trend in organised food processing industry in India (disaggregate): % share of food processing industry

Industry	GVA				No. of factories				Employment				Investment			
NIC Codes	1990-91	2000-01	2010-11	2019-20	1990-91	2000-01	2010-11	2019-20	1990-91	2000-01	2010-11	2019-20	1990-91	2000-01	2010-11	2019-20
101	0.31	0.47	0.97	1.34	0.12	0.18	0.29	0.35	0.24	0.45	0.84	1.04	0.25	1.05	0.73	0.90
102	0.85	1.96	0.94	3.53	0.63	1.08	1.11	1.48	0.76	1.49	1.59	4.11	0.66	2.10	1.18	2.99
103	0.63	1.23	2.94	3.67	0.73	1.93	2.67	2.95	1.01	1.49	2.78	3.16	0.76	1.80	3.35	2.94
104	12.49	7.71	6.91	8.38	11.49	10.82	8.41	6.61	6.68	4.52	5.63	4.61	13.11	8.26	14.55	8.91
105	6.15	10.26	5.81	9.79	1.55	2.76	3.80	4.90	3.65	4.37	5.42	8.73	5.16	4.94	4.62	9.84
106	9.43	9.44	15.11	12.13	34.28	44.84	47.16	45.63	14.73	15.84	17.56	14.57	12.92	10.84	20.06	14.34
108	1.16	1.75	5.83	3.52	0.85	1.79	1.72	2.48	0.64	1.20	1.78	3.12	0.98	1.35	1.38	3.27
11	8.86	9.76	12.50	13.59	3.11	4.05	4.61	5.25	3.80	4.57	6.16	7.62	6.43	9.60	9.85	11.05
12	14.85	18.45	12.57	12.02	28.33	10.11	8.88	7.65	27.41	26.61	19.89	18.16	6.56	5.22	2.94	2.40
107	45.26	38.97	36.42	33.25	18.91	22.43	21.34	24.52	41.07	39.46	38.35	35.61	53.16	54.73	41.34	42.61
Total FPI*	9.63	12.92	8.98	10.51	25.24	20.33	18.5	18.20	19.13	22.73	16.33	14.92	8.06	12.95	10.73	10.01
Manufacturing*	61578	178350	825133	1485745	1,10,179	131268	211660	246504	8279	7988	12695	16624	194913	571799	2393580	4973624

Note: 1. Total food processing industry is given as % of manufacturing. Manufacturing data are in actual numbers with GVA and investment data in rupees crore and employment in '000.

2. NIC Code description is given in Appendix A1

Source: Annual Survey of Industries

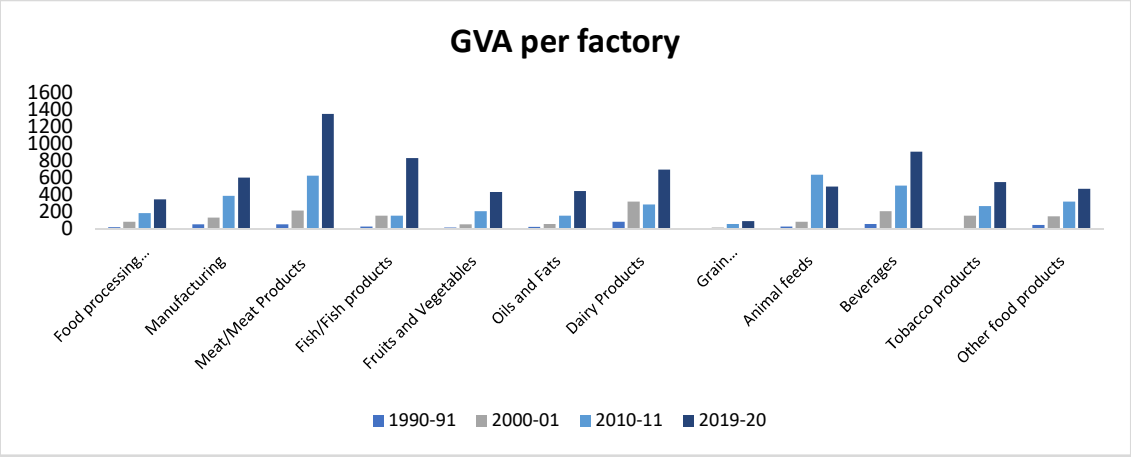
Table 3: Trend in organised food processing industry in India (disaggregate): CAGR

Industry	GVA			No. of factories			Employment			Investment		
	1990-00	2000-10	2010-20	1990-00	2000-10	2010-20	1990-00	2000-10	2010-20	1990-00	2000-10	2010-20
101	24.4	24.1	10.9	2.4	5.7	2.9	6.1	8.3	5.5	34.0	6.8	9.1
102	26.3	7.2	22.6	4.7	2.2	4.1	9.7	2.2	10.4	29.6	7.3	17.4
103	24.4	14.7	8.5	6.5	4.9	2.1	5.2	7.4	3.6	25.5	14.2	5.5
104	10.1	12.1	7.4	-0.3	-1.7	-1.3	-1.3	1.4	0.6	12.4	15.3	1.8
105	17.8	7.7	12.7	5.5	4.2	3.8	4.1	2.4	6.9	18.3	14.7	15.3
106	17.9	14.9	8.4	2.3	1.6	0.8	2.2	1.8	0.3	18.2	16.1	3.4
108	3.2	12.4	3.5	4.3	2.4	4.9	7.2	4.3	9.6	19.3	11.2	16.6
11	19.5	14.4	9.4	3.3	2.0	2.4	1.9	6.2	3.6	19.9	11.2	8.2
12	16.1	5.8	7.1	-10.8	1.5	-0.4	0.8	-1.2	0.6	11.4	6.6	4.8
107	12.5	8.2	5.2	1.3	1.1	2.6	1.0	0.7	1.3	14.5	7.7	7.2
Total FPI	14.8	9.9	7.7	-0.4	1.4	1.3	1.4	1.1	1.8	15.7	10.5	6.8
Manufacturing	11.8	14.6	6.4	1.8	1.9	1.4	-0.1	4.0	2.5	11.3	13.0	7.2

Source: Annual Survey of Industries

To provide an understanding of industry performance in terms of value-added, we estimate the GVA per factory for the food processing industry, its sub-sectors, and manufacturing.

Figure 2: Trend in GVA per factory (in ₹ lakhs)



Source: Annual Survey of Industries

From Figure 2, it can be seen that the GVA per factory for the FPI has been consistently improving in the period 1990-2020 but, the industry has fared worse than overall manufacturing throughout the period 1990-2020 in this regard.However, the difference between FPI and manufacturing GVA per factory declined during this period.In 1990-91, the GVA per factory for FPI was ₹21.3 lakhs while for manufacturing it was ₹55.8 lakhs, with a 128 percent difference.In 2010-11, the GVA per factory for FPI improved as against overall manufacturing, while still performing worse than overall manufacturing.The GVA per factory for 2010-11 for FPI and manufacturing were ₹188.4 lakhs and ₹389.8 lakhs respectively (70 percent difference).For the year 2018-19, the food processing industry GVA was ₹350.1 lakhs and for manufacturing, the figure was ₹634.5 lakhs (58 percent difference).Thus, over time, the food processing industry has been catching up with overall manufacturing in terms of GVA per factory.

At the disaggregate level, it is the *processing and preserving of meat and meat products* that perform considerably better than other sub-sectors with a GVA per factory of ₹1354.2 lakhs in 2019-20, followed by *manufacture of beverages*with a GVA per factory of ₹907.1 lakhs. *Manufacture of grain mill products, starches and starch products*has the lowest GVA per factory with ₹93.1 lakhs followed by *manufacture of vegetable and animal oils and fats* with ₹435.6 lakh. Thus, *processing and preserving of meat and meat products* sector, irrespective of having the lowest share in the number of factories and GVA, its value-added per factory is the highest in the industry for 2019-20.*Manufacture of grain mill products, starches, and starch products,* despite having the largest number of factories and coming second in terms of GVA contribution in 2019-20, has the lowest GVA per factory.During this period, only the sectors *manufacture of prepared animal feeds (108)* and *manufacture of dairy products (105)* showed declining GVA per factory.In recent times, the animal feed industry has been receiving

increased policy support from the government with schemes such as E-PashuHaat, Livestock Insurance Scheme, Rashtriya Gokul Mission, and National Livestock Mission coming to the aid of the sector.This may be attributed to the recent increase in the number of factories in this sector.However, the sector had a fall in GVA in the period 2011-19 which may be attributed to the diversion of raw materials used in the preparation of animal feeds such as soybean, maize, and sorghum used for human consumption, leading to shortages in the feed industry, as argued in the IMARC Report (2021).In the case of the dairy products industry, Ohlan (2013) argued that the Indian dairy processing industry output is highly sensitive to raw material availability and during the period 1995-2009, the growth rate of milk production was adversely affected, falling from 4.61 per cent in 1980-1994 to 3.79 per cent in the subsequent period.As Ohlan (2013) argues, the Indian dairy industry's production efficiency is largely dependent on inputs; therefore during the period 2001-2011, the industry experienced a decline in GVA per factory.

Employment

An analysis of employment generation by industry is essential, particularly for India, as it is a key concern in the industrial growth of the country given its large population size.In terms of employment generation, in 2019-20 the organised food processing industry was the largest employment provider in the country, accounting for 14.9 per cent of total employment in factories, followed by textiles (10.3 per cent) (Annual Survey of Industries, 2019-20).However, the share in total employment of the industry has decreased from 19.1 per cent in 1990-91 and 22.7 per cent in 2000-01 to 14.9 per cent of total employment generated by the organised manufacturing sector in 2019-20.However, the food processing industry is largely unorganised.The unincorporated segment of the food processing industry employs 51.11 lakh individuals, comprising 14.2 per cent of the total employment generated in the unincorporated enterprises (NSSO 73rd round, 2015-16).

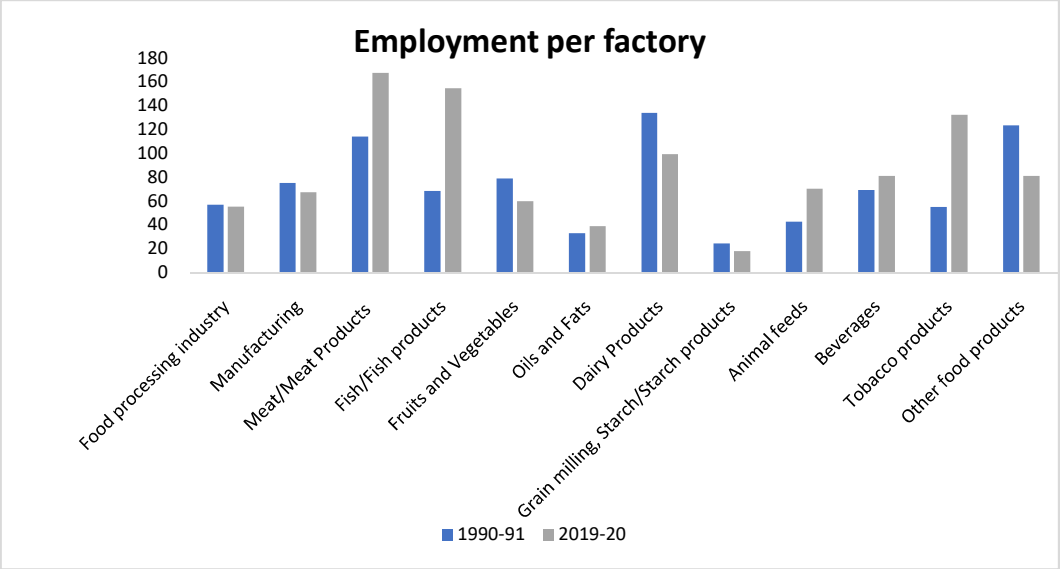
In the period 1990-91 to 2019-20, employment generation in the food processing industry (organised and unorganised) showed a positive trend except for the period 2010-20 when employment generation declined by -2.34 per cent (India KLEMS).This loss of employment meant that the share of the food processing industry declined in the overall manufacturing employment share (22.73 per cent in 2001 to 15.12 per cent in 2019-20) (India KLEMS). However, the organised food processing sector showed a positive employment growth rate in the entire period of 1990-2020 (Table 3). For the period 1990-00, the organised FPI grew at a CAGR of 1.4 per cent when manufacturing employment declined.In the subsequent periods as well, the organised FPI has shown positive employment growth in line with the overall manufacturing sector, with employment growing at 2.17 per cent in the period 2011-20 when manufacturing employment grew at 3.16 per cent.

The largest employment provider in the FPI sub-sectors is the (Table 2) *manufacture of other food products (107)* with a 38.4 per cent share in total employment generated in the FPI, engaging a total of 8,76,546 persons in 2019-20, which is followed by *the manufacture of tobacco products (110)*:18.2 per cent and *manufacture of grain mill products, starches, and starch products (106)*:14.6 per cent.*Processing and preserving of meat and meat products (101)* generate the lowest employment

in the industry, engaging 25,635 persons in 2019-20 (1.0 per cent), and has been the lowest employment generator throughout the period 1990-2020.Except for *the manufacture of grain mill products, starches, and starch products (106), manufacture of tobacco products (110),* and *manufacture of vegetable and animal oils and fats (104)*, all other sub-sectors have had positive employment growth throughout the study period 1990-2020.

A look at the employment per factory will provide an understanding of the industries that provide the highest employment per factory. This also indicates which industries have become more capital-intensive in this period.To this end, the employment per factory is estimated for 1990-91 and 2019-20 to observe the change over the period.

Figure 3: Trend in employment per factory



Source: Annual Survey of Industries

The number of employees per factory in the food processing industry for the year 1990-91 was 56.7, which rose to 64.6 employees per factory in 2005-06, however, the employment per factory reduced to 55.3in 2019-20. This fall in employment per factory is despite the organised FPI showing a positive employment figure, indicating that the enterprises in the FPI are increasingly mechanising their production activities (Figure 3).*Processing and preserving of meat and meat products,* despite having the lowest share of employment generation in the industry, has the highest employment per factory with each factory engaging an average of 167.6 workers in 2019-20.The *processing and preserving of fish and fish products* followed by an average employment per factory of 154.8 persons.The lowest employment provider per factory was *the manufacture of grain mill products, starches, and starch products* employing 17.8 persons.Employment per factory has declined for *processing and preserving of fruit and vegetables, manufacture of dairy products, manufacture of grain mill products, starches and starch products,* and *manufacture of other food products* from 1990-91 to 2019-20, indicating increased

capital intensity in these sub-sectors.The overall food processing industry has also slightly declined in employment generated per factory, from 57 per factory in 1990-91 to 55.3 persons per factory in 2019-20, while the overall manufacturing sector has shown a significant decline in employment per factory in the period, declining from 75.1 persons in 1990-91 to 67.4 persons per factory in 2019-20.Thus, the food processing industry does not significantly increase capital intensity compared to the overall manufacturing industry.

Employment elasticity

As seen in the previous section, employment growth in the food processing industry was negative in the recent period, along with employment growth in the overall manufacturing sector.However, organised food processing employment showed a positive trend.At the same time, employment per factory declined, while growth in GVA was overall positive for both the food processing and manufacturing sectors.Thus, to understand whether the rise in GVA contributes to a rise in employment, even though the overall FPI was showing negative employment generation and employment per factory was declining, we compute the employment elasticity, which shows the percentage change in employment with a one per cent change in value added in output, to reveal if over the decades the food processing industry is absorbing an increasing number of labourers.

Islam and Nazara (2000) use a descriptive method to calculate employment elasticity, which is calculated as follows:

$$\in = \frac{(E1 - E0)/E0}{(y1 - y0)/y0}$$

Where, $\in$ is the employment elasticity, E is the number of persons employed at a time period, and y is the value added to GDP at a time period. 1 and 0 denote current and past time periods respectively.

Using this formula, the employment elasticity of FPI for 1990-2006 is 0.07 and for the period 2006-2020, it is -0.02, which shows that employment elasticity has slightly declined over the decades, meaning that employment potential in the sector is declining. However, in the organised food processing sector, the employment elasticity has increased from 0.04 (1990-2006) to 0.08 (2006-2020). For the overall manufacturing sector, the employment elasticity for the period 1990-2006 was 0.02 and for the period 2006-2020 was 0.24.Thus, in the unorganised sector, employment elasticity decreases, while the organised sector shows employment potential.

At the disaggregate level, taking the entire study period 1990-2020, the manufacture of prepared animal feeds (108) had the highest employment elasticity (0.07), followed by the processing and preserving of fish and fish products (102), and processing and preserving of meat and meat products (101) with employment elasticity of 0.06 and 0.62 respectively.The manufacture of vegetable and animal oils and fats (104) has the lowest employment elasticity (0.001).While in recent periods, the manufacture of beverages (110) has shown promising signs, with an employment elasticity of 0.45 for the period 2006-2020, an increase from 0.09 in 1990-2006.Other sub-sectors, including processing and

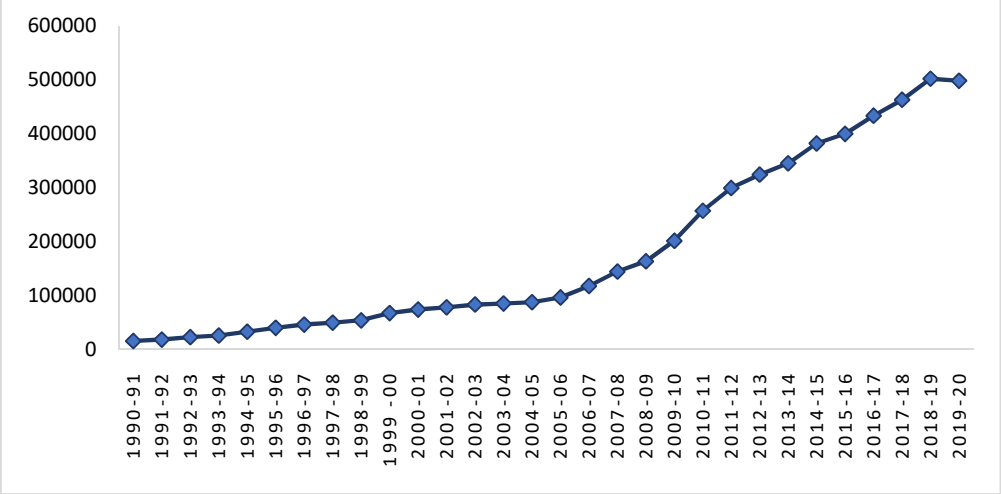
preserving of meat and meat products and manufacturing of dairy products (105), have high employment elasticity in the period 2006-2020 (0.25 and 0.21, respectively).

The organised food processing sector with extensive backward and forward linkages has immense potential for employment generation directly and indirectly across the supply chain.Thus, the industry provides a means for high labour absorption with relatively less capital input to produce a high output, which is a formula that will be welcome for India with its abundance of labour and relative capital shortage.

Investment

The growth of a sector can be better understood by the amount of capital inflow.Regarding investment in the food processing industry, Figure 4 shows that the sector experienced an increase in investment during 1991-2000, the first phase of liberalisation.However, after 2000, the sector received significant investments from both domestic and foreign sources.The capital invested grew by 11.8 per cent over the time period, indicating a significant increase in investment.The increase in investment was greater in the second half of the period considered (2008-20) when the invested capital grew at a CAGR of 10.90 per cent.The FPI accounted for 10.0 per cent of the total invested capital in the manufacturing sector, an increase from 8.1 per cent in 1990-91The capital invested in FPI rose primarily due to the rise in scale of operations and capital deepening, with invested capital rising at an annual rate of more than 6 percent after 2000 (Bathla and Jee, 2021).

Figure 4: Trend in invested capital in theorganised food processing sector of India (₹ crore)



Source: Annual Survey of Industries (ASI)

In terms of output, the food processing sector comes second among all industries, accounting for 14.3 per cent of total output, while accounting for only 7.7 per cent of invested capital input, indicating that the sector is labour-intensive. Capital to output ratio for food products is 0.4 in 2019-20 (the C-O ratio has remained in this range for the period 1990-2020), which is lowest as compared to

other labour-intensive industries and lower than the national average of 0.5, meaning that the sector requires less capital for producing one unit of output in comparison to other sectors (Annual Survey of Industries).

At the disaggregate level, invested capital in the FPI provides a picture of the sectors that attract the most investment in an industry.Therefore, a descriptive analysis of the share of each subsector in overall industry investment and the growth rates in investment in each subsector is undertaken.The results presented in Table 2 indicate that the *manufacture of other food products (107)* has the highest invested capital in the sector with an investment of Rs. 2,13,66,207 lakhs, which accounts for 42.6 per cent of the total invested capital in the sector.*Manufacture of grain mill products, starches, and starch products (106)* accounts for 14.3 per cent of the total invested capital in the sector.*Processing and preserving of meat and meat products (101)* has the lowest investment in the sector, with only 0.9 per cent of invested capital going to the subsector (Table 2).However, this sector has the highest GVA and employment per factory (Figures 2 and 3**)**, meaning that additional investment in the sector is beneficial to the economy, but the sector does not receive an adequate flow of investment.The same can be observed for the *processing and preserving of fish and fish products.*

Over the years, the government has taken several measures to boost the sector by making it more attractive for investment.Several fiscal measures have been adopted by the food-processing sector to achieve the same.These include the relaxation of several taxes and duties wherein export-oriented units are given several concessions, such as duty-free imports of capital goods, raw materials, and intermediaries (Government of India, 2020-21) Exemption from corporate taxes, zero GST on several products, and a lower tax rate on a bulk of other food products that mostly constitute the raw material base for the industry (ibid; CBIC-GST).Further, to promote investment in the sector, the government has envisaged long-term plans, such as setting up mega food parks across the country, infrastructure investment in cold chains, storage, packaging, logistics, and the expansion of processing capacities. (Government of India, 2019-20). Recently (31.03.2021), the cabinet approved a central sector scheme, the Production-Linked Incentive Scheme for the food processing industry (PLISFPI) to support Indian food brands in making them global giants in food manufacturing. The government initiatives have resulted in a steady rise in investment in the sector over the years.

The FPI has benefitted from liberal policies adopted regarding trade and industrial policies, making it one of the fastest-growing sectors in post-reform India (Bhavani et al., 2006).The sector has emerged as a major segment of the Indian economy with its contribution to GDP, output, employment, and investment.In 2018-19, the sector contributed ₹2,54,879 crores to the gross value added in the country, which is a significant rise from the value added by the sector in 1990-91 which stood at ₹43,853 crores, however in terms of the contribution to value added in the overall manufacturing sector, the food processing industry lost its share from 12.18 percent in manufacturing GVA to 10.8 percent share indicating that other sectors have grown faster than the food processing sector (National Account Statistics).The government continued its support in this sector through policy measures.An increased number of mega food parks were sanctioned, the introduction of Pradhan Mantri Kisan Sampada Yojana (PMKSY), the introduction of production-linked incentive schemes, and so on

(Government of India, 2020-21).The annual average growth rate for the food processing industry for the 5years period 2015-16 to 2019-20 is 9.6 per cent while the AAGR for the manufacturing and agriculture sectors is 6.2 per cent and 4.2 per cent respectively, with the GVA of the overall economy growing at 6.4 per cent in the period.This shows that the food processing industry has great potential and is growing at rates higher than the national averages.The industry is also attracting foreign investment in the form of foreign direct investment (FDI) as a result of policy initiatives, a raw material base, and an attractive domestic market.

Table 3: Foreign Direct Investment inflow into Indian food processing sector(US$ million)

Year	FDI (US$ million)	% in total FDI
2000-01	45.75	1.13
2001-02	219.39	3.58
2002-03	36.88	0.73
2003-04	109.22	2.52
2004-05	43.98	0.73
2005-06	41.74	0.46
2006-07	102	0.44
2007-08	70.17	0.20
2008-09	102.71	0.24
2009-10	278.89	0.84
2010-11	188.67	0.64
2011-12	170.21	0.51
2012-13	401.46	1.48
2013-14	3,982.89	12.94
2014-15	515.86	1.46
2015-16	505.88	1.13
2016-17	727.22	1.72
2017-18	904.9	2.29
2018-19	628.24	1.45
2019-20	904.7	1.61
Total	9,980.76	

Source: DPIIT

The sector attracted US$ 9,980.76 million of FDI in the period 2000-2020 (Table 3). The liberalisation of FDI policies since 1991, particularly in the trading sector in 1997, which was followed by SBRT (Single Brand Retail Trading) in 2006 and MBRT (Multi-Brand Retail Trading) in 2012, has made India an attractive investment hub. Overcoming the initial resistance to opening up the food processing sector to foreign investment, the government decided to allow 100 per cent FDI in the food processing sector under the automatic route, allowing foreign companies to invest freely in the retail food processing sector (MoFPI-EY-CII Report, 2017).This shows the clear priority given to the sector by the government, and it is evident from the fact that 85 per cent of FDI into the sector after 2000 came in the period 2012-2020.FDI was particularly high in the year 2013-14 due to government efforts to clear out long-standing cases (USDA Report, 2016).Additionally, two major investments by Coca-Cola and PepsiCo.Coca-Cola announced a $5 billion investment in the sector in October 2013 and PepsiCo in November 2013 announced a $5.5 billion investment in the sector, part of which was accounted for in the FDI figures of the year (Mitra, 2015).Foreign investment in the sector is on the rise and is expected to attract more investment because of the cheaper labour force, large raw material base, government

initiatives, and large domestic consumer market, among other factors (Government of India, 2020-21; MoFPI-EY-CII Report, 2017).

To further understand the factors that explain the performance pattern of the food processing industry, further analysis of policy initiatives for the sector over the years and their impacts need to be studied.In addition, a state-level analysis of the performance of the industry should be undertaken, which will provide better clarity about the differences in sub-sector performance.

Performance of Food Processing Industry: Regional Disparities

Agriculture in India is a 'State subject', meaning the implementation of reforms in the farm and market is under the purview of the states. Each state has different agro-climatic conditions and therefore require state-level policies. Trade and commerce on the other hand is under the purview of the Union government, with the state governments having almost no role to play in the export of agricultural commodities. The recently introduced Agriculture Export Policy-2018 has hence, sought to include the state in the promotion of agriculture and processed food exports by following a cluster development framework. The policy also encourages states to include agriculture exports in their state export policies. The emphasis on state-level coordinated efforts in promoting agro-exports indicates the necessity of a state-level analysis of the performance of the food processing industry.

The food processing industry is a major industry in many states. The food products industry accounts for highest value of total output of all industries in Andhra Pradesh (23.93%), Delhi (38.19), Madhya Pradesh (21.86), Maharashtra (12.85), Rajasthan (13.31), Tripura (30.49) and Uttar Pradesh (22.94) in 2019-20, and in a large number of other states as well, the industry is among the top output producing industries (Annual Survey of Industries, 2019-20). Now, to further show the position of the food processing industry across states and how it has evolved over the decades post-liberalisation, we look at key performance indicators of the industry at the state level taking the case of thetop ten performing states in terms of gross value added.

Table 4: Performance of food processing industry: Sub-national (% share in total food processing industry)

	GVA (%)					Number of Factories (%)			
	1991-92	2000-01	2010-11	2019-20		1991-92	2000-01	2010-11	2019-20
MH	16.3	18.5	13.2	16.9	AP	37.3	23.0	24.4	22.4
UP	14.5	13.9	14.4	12.9	TN	12.0	14.4	13.8	13.1
KA	6.9	9.8	10.2	11.9	PUN	3.6	5.6	7.1	7.3
AP	14.2	11.2	11.2	11.7	MH	6.9	8.4	7.8	6.2
TN	10.6	7.8	7.2	7.5	WB	3.4	5.7	5.5	5.7
GUJ	5.1	5.2	4.6	5.8	GUJ	4.0	5.4	5.5	5.6
WB	3.2	3.6	4.5	4.6	KA	4.5	5.3	5.0	5.4
PUN	6.2	6.2	3.9	4.0	UP	9.8	8.7	5.6	5.2

HAR	2.8	3.4	4.2	4.0	MP	5.4	3.2	2.5	2.7
MP	5.6	3.8	4.1	3.2	HAR	2.1	2.2	1.7	2.5
Total Persons Engaged (%)					Invested Capital (%)				
	1991-92	2000-01	2010-11	2019-20		1991-92	2000-01	2010-11	2019-20
AP	28.3	27.8	23.5	21.1	MH	20.9	25.3	17.1	18.3
MH	12.4	13.7	11.8	12.0	UP	17.8	16.4	15.2	15.8
TN	7.9	7.7	8.5	11.5	AP	11.0	10.4	12.6	10.5
UP	13.2	9.1	7.8	8.0	KA	6.4	7.0	9.7	9.8
KA	4.2	4.4	5.2	6.3	GUJ	6.5	6.3	5.7	8.0
WB	3.9	3.6	4.6	5.5	TN	8.1	7.7	7.1	6.5
GUJ	4.2	3.9	5.0	5.3	HAR	3.2	3.1	6.6	4.6
PUN	3.5	4.9	5.5	5.0	PUN	5.6	4.7	5.2	4.6
HAR	2.3	2.3	2.2	3.3	WB	2.8	2.5	3.7	4.3
MP	4.3	2.9	2.3	3.0	MP	7.6	3.7	4.8	3.5

Note: Andhra Pradesh includes data of Telangana

Abbreviation: Appendix A1

Source: Annual Survey of Industries

The top ten states account for 82.5 per cent of total GVA from the food processing sector in 2019-20. Maharashtra is the top performer in terms of GVA in 2019-20 with a 16.9 per cent share in total GVA. The state has maintained its share over the three decades and GVA has grown at the rate of 12.2 per cent in the period which is higher than the national average (11.8 per cent). Food processing contributed 10.7 per cent of the state's GVA in 2019-20, showing an increase from 7.8 per cent and 5.3 per cent in 1991-92 and 2005-06 respectively. The state has the highest invested capital in the food processing industry out of all states over the period 1991-2020, accounting for 18.3 per cent of total invested capital in the sector in 2019-20. Maharashtra performs better in the industry despite it having a comparatively lesser number of factories and not engaging the largest number of workers. This indicates the focus of the state on capital-intensive production in the sector.

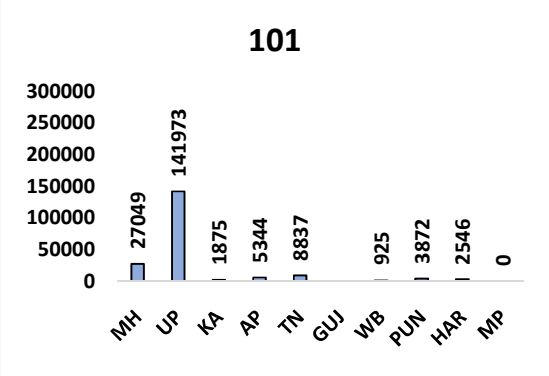
Uttar Pradesh is the second-best performer in terms of GVA, accounting for 12.9 per cent of GVA in the industry in 2019-20. The state has a low share in the number of factories (5.2 per cent in 2019-20). Uttar Pradesh also follows the growth pattern of Maharashtra by developing the industry with increased capital investment. Uttar Pradesh makes up for 15.8 per cent investment in the sector in 2019-20 and has consistently invested in the sector over the time period. The investment in the FPI accounts for 31.1 per cent of investment in the state across all industries. Overall, across states, investment into the sector has been increasing steeply as indicated by the CAGR of invested capital, which goes into double-figure growth rates for all the states (except Madhya Pradesh at 9.4%) for the period 1991-2020.

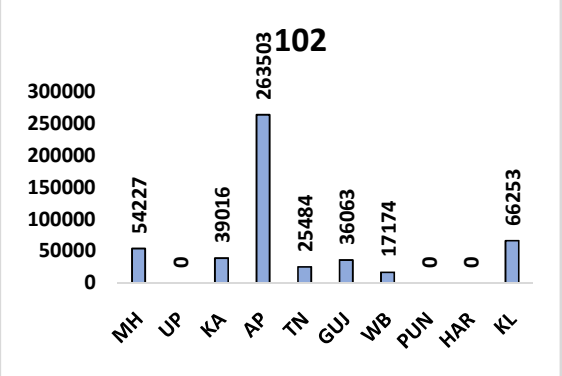
At the time of liberalisation in 1991, Andhra Pradesh was the top-performing state in terms of gross value added with a 14.2 per cent share in total GVA from the sector. The food processing industry (FPI) constituted 24.7 per cent of the state's total GVA at the time. However, in 2019-20 the share of

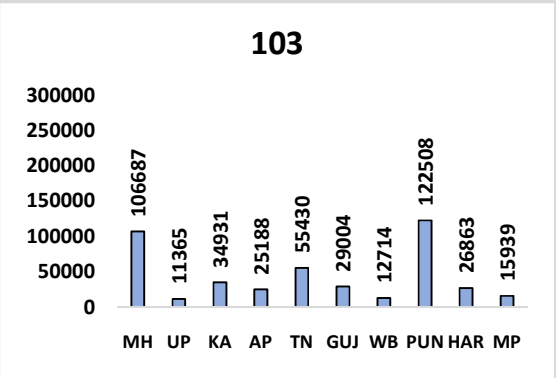
Andhra Pradesh in GVA of FPI came down to 11.7 per cent but the share of the industry in state GVA remained high at 29.1 per cent. In terms of the number of enterprises and employment, Andhra Pradesh is the leading state, however, the share of the state in these indicators has also declined over time.The state had a significantly large share of factories (37.26%) in the sector in 1991-92. This was due to the large number of tobacco factories functioning in the state at the time which are non-operational from 1995 (Annual Survey of Industries). The state continues to have the largest number of factories in the sector with a 13.61 per cent share in the total number of factories in FPI, which accounts for 35.57 per cent of total factories in the state.

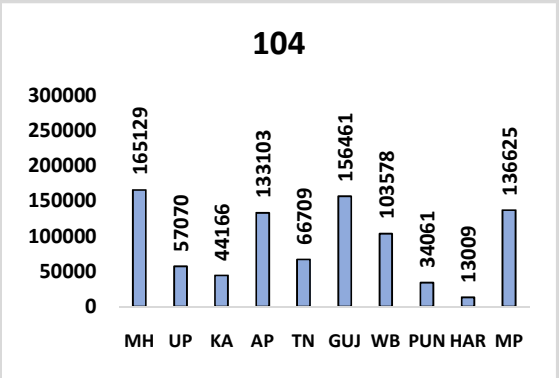
The sub-national level aggregate study has revealed the best-performing states in the industry. However, to gather further insight into the state-wise performance in the food processing industry a disaggregate study is required. The disaggregate study will provide an understanding of the factors for the regional variation in performance of the industry by looking at the state resources and policies.

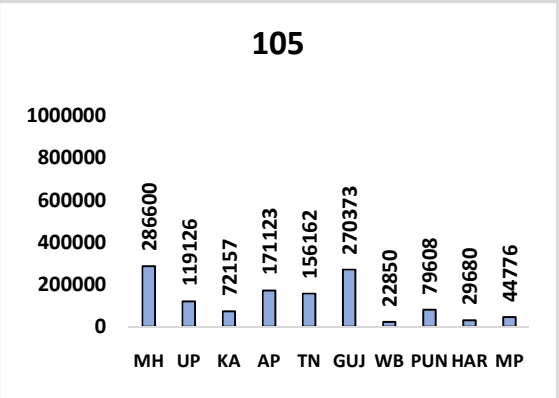
Box 1: Performance of FPI at the sub-national level: Sector- wise (in ₹ lakhs)

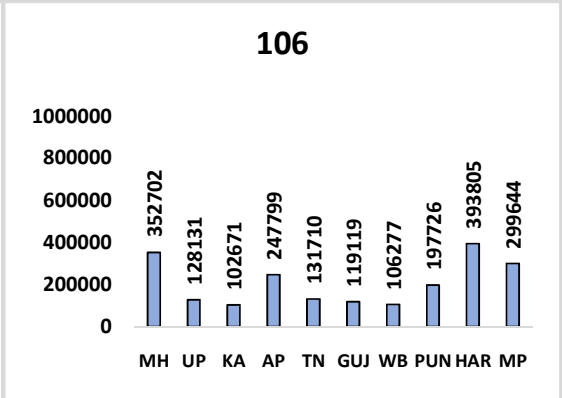


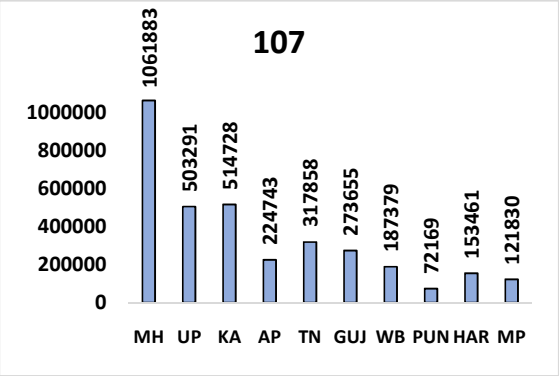


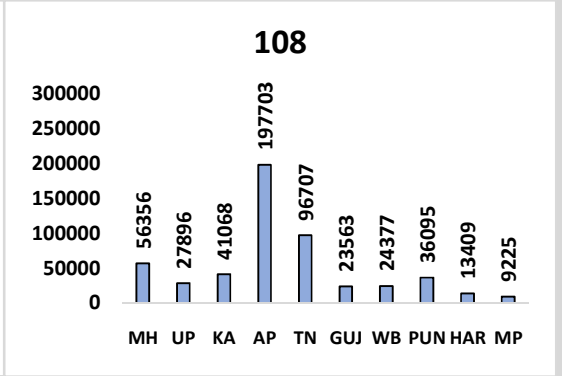


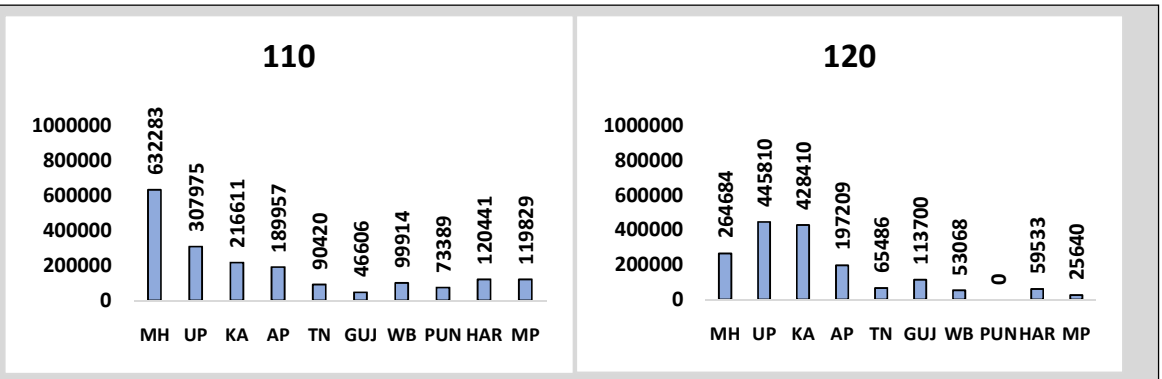












Note: Abbreviations are given in the Appendix
Source: Annual Survey of Industries

Processing and preserving of meat (101)

Uttar Pradesh outperforms all states in terms of GVA contribution to the *processing and preserving of meat* with a contribution of ₹1,23,351 lakhs in 2019-20 which accounts for 59.53 per cent of gross value added in the sector across states (Annual Survey of Industries 2019-20). This is a substantial rise from the GVA by the state in the sector in 1990-91, which stood at ₹742 lakhs. This may be attributed to Uttar Pradesh being the largest producer of meat in the country producing 1,166,000 tonnes in 2019-20 (Basic Animal Husbandry Statistics, 2020). The state has the largest number of factories in the sector with 46 factories (6 in 1990-91) which constitutes30.07 per cent of the total number of factories in the sector. Also, in terms of investment into the sector, Uttar Pradesh is the leading state with ₹2,30,691 lakh capital invested in the sector in 2019-20 which is 51.11 per cent of total capital invested into the sector across the country. Maharashtra follows with a GVA contribution of ₹21,258 lakh in 2019-20, accounting for 10.31 per cent of the total GVA in the sector. Thus, both Uttar Pradesh and Maharashtra account for 69.84 per cent of GVA in the sector. Maharashtra is the second largest producer of meat in the country with 1,140,000 tonnes in 2019-20 (Basic Animal Husbandry Statistics 2020). The state has 32 factories in the sector which is the second highest in the sector and also has invested capital of ₹64,856 lakhs in the sector which is 14.37 per cent of total invested capital in the sector across the country.

Processing and preserving of fish, crustaceans and molluscs and products thereof (102)

In terms of GVA added in the *processing and preserving of fish, crustaceans…* Andhra Pradesh is the leading contributor with GVA of₹2,74,175 lakhsin 2019-20 which accounts for 50.38 per cent of total GVA in the sector. The state witnessed significant growth during the period 1990-2019 in terms of GVA (₹1,747 lakhs in 1990-91), invested capital (₹2,788 lakh in 1990-91 to ₹5,92,708 lakhs in 2019-20) and

the number of persons engaged, which rose from 2,059 persons in 1990-91 to 50,700 persons in 2019-20. The better performance of Andhra Pradesh maybe be on account of the fact that the state is the largest producer of fish (inland and marine combined) in the country, producing 41.7 lakh tonnes in 2019-20 (Handbook on Fisheries Statistics, 2020). The state also has the largest invested capital in the sector among all states in 2018-19 accounting for 37.1 per cent of total invested capital in the sector for the year and also has the highest number of persons engaged in the sector. In terms of the number of factories in the sector, Andhra Pradesh has the second-highest number of factories with a total of 105 factories. The state has given priority to all three main areas of fisheries production (brackishwater aquaculture, freshwater aquaculture and marine fisheries). The state received support from Marine Products Export Development Authority (MPEDA) and the union government during the period in the form of import relaxation, policy intervention and supporting production activities. Along with the proactive role played by the Andhra Pradesh Department of Fisheries (APDoF) and the highly-innovative fish farmers, the state has shown better performance (Muralidharan, 2015). Kerala with total fish production of 6.8 lakh tonnes in 2019-20 (ibid), is the second-best performing state in the production of fish and related products with a GVA contribution of ₹62,037 lakh in 2019-20. The state has the highest number of factories in the sector with 174 factories, the second highest invested capital and persons employed across the country in the sector.

Processing and preserving of fruit and vegetables (103)

Punjab is the leading state in the *processing and preserving of fruit and vegetables* – sector in terms of GVA contribution with ₹1,29,562 lakh in 2019-20 (an increase from ₹51 lakh in 1990-91) which is 22.92 per cent of GVA from the sector. The state has the second-highest invested capital of ₹1,13,751 which accounts for 7.72 per cent of capital invested in the sector across the country, it also has the second-highest number of persons engaged. In terms of output and number of factories, however, the state is not among the best two performers. Punjab is also not among the leading producers of fruits and vegetables in the country either according to the National Horticulture Board Statistics (Horticulture Statistics at a Glance, 2018). The reason for the high performance of the state in terms of GVA maybe attributed among other factors to major FMCG companies such as ITC taking interest in the fruit processing units of the state, particularly in the state government undertaking Punjab Agro Juices Ltd. (PAJL) where the processing of guava and kinnow to juice is done. These two fruits are estimated to have huge demand in the market and Punjab is a leading producer. Also, FMCG companies are making use of the processing facility in Punjab to process fruits and vegetables procured from other states such as Himachal Pradesh and J&K due to the strong industrial ecosystem (Roy, 2018). Maharashtra is the state with the second-highest GVA in the sector with a GVA contribution of ₹1,00,288 lakhin 2019-20. The state is the best performer in terms of output, investment, number of factories and employment. Maharashtra is a leading producer of mangoes, bananas, grapes, oranges, onions, and tomatoes giving the state an advantage in terms of raw materials. This, along with the strong policy support in the state for food processing units such as the Maharashtra State Food Processing Policy 2017, providing power subsidy, capital subsidy, interest subsidy and other support measures for MSMEs, has made the state a strong performer in the sector.

Manufacture of vegetable and animal oils and fats (104)

Maharashtra is the leading performer in the *manufacture of vegetable and animal oils and fats*sector with a GVA contribution of ₹2,31,241 lakh in 2019-20, an increase from ₹10,067 lakhs in 1990-91. In terms of oil seed production, the most prominent primary source of production is soybean (DGCIS, Department of Commerce) and Maharashtra is a top producer of soybean accounting for 35.4 per cent of soybean production in the country in 2017-18 (Directorate of Economics and Statistics, DAC&FW). This is complemented by the state being the largest employment generator in the sector, also has a high number of factories in the sector with 373 factories, and also an invested capital of ₹8,46,254 in 2019-20. Gujarat is also a top-performing state in the sector with the largest number of factories (432 factories), output (₹53,81,773 lakh) and investment (₹7,85,092 lakh). Gujarat is a leading producer of many oil seed crops such as groundnut, rapeseed and mustard. For instance, it is a prominent producer of groundnut with the state producing 42.9 per cent of groundnut in the country in 2017-18 (Directorate of Economics and Statistics, DAC&FW) which puts the state in an advantageous position as groundnut is a key primary source of oil production in the country following soybean, rapeseed and mustard according to DGCIS, Department of Commerce (NFSM Status Paper).

Manufacture of Dairy Products (105)

Maharashtra and Gujarat are the leading states in the *manufacture of dairy products* with Maharashtra having the highest GVA in the sector with ₹3,47,834 lakh GVA in 2019-20 (an increase from ₹ 2,420 lakh in 1990-91) accounting for 23.03 per cent across all states, followed by Gujarat with a GVA of ₹1,73,263 lakhs which accounts for 11.47 per cent of GVA across states. Gujarat has the highest invested capital in the sector with ₹9,49,573 lakh and also the highest output (₹43,50,504 lakh) in 2019-20. The Gujarat Cooperative Milk Marketing Federation (GCMMF), is a major player in the dairy sector and contributes a large extent to the performance of Gujarat in the sector. According to the National Dairy Development Board- ICAR Research Paper (n.d), Gujarat is a leading producer of milk and also has advanced dairy infrastructure in comparison to other states, whereas Maharashtra is the leading state in terms of production of value-added products out of milk in the country despite the state not being a top milk producer, explaining the better performance of these states. In terms of the number of factories, both states are not sector leaders, indicating the operation of large-scale factories in the states with hugeinvested capital. In terms of milk production, Uttar Pradesh is the largest producer, producing 16.06 per cent of total milk in the country in 2019-20 (Basic Animal Husbandry Statistics, 2020). The state is also a leading performer in the manufacture of dairy products with a GVA of ₹1,49,361 lakh in 2019-20 and also generates the most employment in the sector, employing 14,562 persons. Uttar Pradesh also has high investment in the sector with capital invested of ₹5,99,729 lakh in 2019-20 placing the state as the third-best performer in the sector.

Manufacture of grain mill products, starches and starch products (106)

Under *manufacture of grain mill products, starches and starch products*, in terms of contribution to organised food processing GVA, the leading states are Haryana (₹1,96,881 lakh), Madhya Pradesh (85,287 lakh) and Maharashtra (₹82,119 lakh) according to ASI 2019-20 data. The grain milling units are mainly spread across Andhra Pradesh, Telangana, Tamil Nadu, Punjab, Uttar Pradesh, Haryana, West Bengal and Odisha. The grain milling industry is an amalgam of traditional and modern mills with a large number of small and medium-sized mills operating in the country (Chandrashekhar, 2019). The annual survey of industries (2019-20) data shows the presence of a large number of factories operating across states in the sector however, the value addition by these states is low. The presence of a large number of small-sized factories might be the reason for several states with a large number of factories having a low-level of GVA. Haryana has a relatively lower number of factories in the sector with 647 factories in 2019-20 but the invested capital in the sector for the state is the highest in the country at₹10,84,910 lakh. The state also contributes a major share in the export of fine long-grain basmati rice, with the state accounting for 75 per cent of total Basmati export from the country due to the good quality of produce (Bishnoi and Kumar, 2018) the performance of the state in the sector maybe partially attributed to this. The top performing states in the sector, as mentioned, are all among the top producing states of rice, wheat, pulses, maize and other products required for the industry according to the Directorate of Economics and Statistics, Ministry of Agriculture (2019-20).

Manufacture of other food products (107)

In the sector *manufacture of other food products*, Maharashtra is the leading state in terms of contribution to GVA of ₹10,69,191 lakh in 2019-20 which is 20.85 per cent of GVA in the sector. The state has been the top performer in the sector from 1990-91 when the GVA contribution by the state was ₹67,376 lakh. The other leading states are Uttar Pradesh (₹7,74,127 lakh), Tamil Nadu (₹3,33,640 lakh) and Gujarat (₹2,95,131 lakh). Maharashtra accounts for 24.85 per cent of invested capital in the sector at₹53,10,575 lakh and employs the highest number of persons in 2019-20 with employment generated for 1,22,105 persons. According to figures from the Annual Survey of Industries, Maharashtra throughout the study period has been investing higher amounts of capital than other states in the sector. Also, a major component in the sector,*manufacture of other food products* is manufacturing of sugar for which the raw material is sugarcane. Uttar Pradesh and Maharashtra are the top two sugarcane-producing states with an output of 179.5 million tonnes and 69.3 million tonnes respectively in 2019-20 accounting for 46.3 per cent and 18.9 per cent of total sugarcane production (Directorate of Economics and Statistics,Department of Agriculture, Cooperation and Farmers Welfare, 2020-21) giving both the states an advantage in the sector.

Manufacture of prepared animal feeds (108)

In 2019-20, Andhra Pradesh is the leading contributor to GVA from the organised sector of *manufacture of prepared animal feeds* with ₹1,77,699 lakh GVA which is 41.11 per cent of total GVA in the sector, an

increase from ₹472 lakhs in 1990-91. Other top-performing states are Tamil Nadu (₹87,611 lakh) and Maharashtra (₹47,033 lakh). The animal feed industry has mainly three segments; poultry feed, cattle feed and aqua feed of which the poultry feed industry is the largest segment owing to its largely organised nature and the high demand for chicken (Singh. R, 2022; IMARC Report, 2022). The top performing states in the poultry industry are Andhra Pradesh and Tamil Nadu (Ministry of Agriculture and Farmers Welfare, GOI, 2019) and these states have witnessed an increase in manufacturing in recent years according to the IMARC report on animal feed industry (IMARC, 2022). Also, Andhra Pradesh, Maharashtra and Tamil Nadu are top-producing states of raw materials for the manufacture of animal feeds such as soybean, maize, and sorghum (Ministry of Agriculture and Farmers Welfare, GOI, 2019).

Manufacture of beverages (110) and manufacture of tobacco products (120)

In terms of *manufacture of beverages*, Maharashtra and Uttar Pradesh are the leading performers concerning the GVA in the sector in 2019-20. Maharashtra has the highest GVA contribution with ₹4,03,380 lakhs value added in the sector, followed by Uttar Pradesh with ₹32,74,563 lakhs. For Maharashtra, the GVA grew from ₹35,073 lakhs in 1990-91 to ₹4,03,380 lakhs in 2019-20. The state has also grown in terms of the number of factories with 262 factories in 2019-20 as compared to 117 factories in 1990-91. The invested capital, GVA and employment generated have substantially improved during this period as the industry grew. The capital invested grew from ₹17,930 lakh to ₹7,80,466 lakh in 2019-20. The state also generated employment for 23,334 persons in 2019-20, which is a substantial rise from 7,382 persons engaged in 1990-91. Maharashtra is the largest wine-producing state in the country with 90 per cent of the wine industry in the country being located in the state. This is aided by the state having a grape processing policy, a separate policy to promote the wine industry along with a state food processing policy which was introduced in 2017. Also, three wine parks have been set up across the state. Along with this, the state has a large raw material base for the manufacture of non-alcoholic beverages, with the state being a major producer of grapes, banana, mango, papaya, citrus, guava (Ministry of Agriculture and Farmers Welfare, GOI, 2019). Uttar Pradesh is also a major state in terms of *manufacture of beverages* with a large amount of capital invested into the sector, ₹11,12,759 lakh in 2019-20 which is a substantial rise from ₹16,690 lakh invested in 1990-91. The sector has received policy support from the government with the introduction of the state food processing policy in 2017, and numerous subsidies and incentives provided to boost investment in the state. This, along with the large population base and the state being a major producer of several fruits, (Ministry of Agriculture and Farmers Welfare, GOI, 2019) has resulted in a large inflow of investment into the state (Gaur, 2021).

In *manufacture of tobacco products*, Uttar Pradesh and Maharashtra are the best-performing states in terms of GVA in 2019-20. Uttar Pradesh had a GVA of ₹4,58,932 lakh in 2019-20 (an increase from ₹17,033 lakh in 1990-91). Uttar Pradesh is the third-largest producer of tobacco following Gujarat and Andhra Pradesh (Ministry of Agriculture and Farmers Welfare, GOI, 2019). The state however, outperforms both Gujarat and Andhra Pradesh in terms of gross output as well as GVA and this may be

due to the better efficiency of factories in Uttar Pradesh in terms of converting the raw materials into value-added products. Maharashtra is the second-best performing state with ₹2,71,082 lakhs in GVA in 2018-19. The state has seen a rise in investment from 1990-91 when invested capital was ₹4,213 lakh to a capital invested of ₹1,77,908 lakh in 2019-20. Maharashtra lags behind several states such as Haryana, Andhra Pradesh, West Bengal, Gujarat and others in terms of gross output but in terms of value-added the state outperforms all these states and comes second in the country behind Uttar Pradesh implying that the state is a better performer when it comes to producing value-added products in the sector, which may be due to the investment in the state being diverted into high value-added segments in the manufacture of tobacco products.

Policy Discourse

The evaluation of the state-level performance of the food processing industry over the years at both the two- and three-digit levels of NIC classification reveals that Maharashtra and Uttar Pradesh outperform all other states in most of the performance indicators considered. The availability of raw materials required for the processing of food in these two states is a major factor in their better performance. Along with this, other factors such as the policies adopted over the years to boost the sector, infrastructure, logistics and large consumer base also act as factors for these states being top performers in the food processing industry. A further look at the factors for the better performance of Maharashtra and Uttar Pradesh in terms of policy support, infrastructure and so on for the sector will shed more light on how other states with potential in the industry can develop their respective industries.

Maharashtra is the most industrialised state in India having a well-established industrial and financial ecosystem. The state has the third largest geographical area in the country, meaning more area for agricultural production. Maharashtra has 225 lakh hectares of cultivable land, 720 km of coastline and nine agro-climatic zones, all of which add to the food processing asset of the state. The state is particularly suited for manufacturing as its location gives the state an advantage in connecting to the domestic market as well as the international market. The two major ports of India, Jawaharlal Nehru Port and Mumbai Port are located in the state making it suitable for trade. The state is also well connected to major industrial and consumption centres through road, rail and air. In terms of ease of doing business index, Maharashtra ranks first in the country in 2016 according to the rankings released by Asian Competitiveness Institute. The state bagged the title of the top-performing state under Transport Connectivity Pillar in Export Preparedness Index 2020. The state has a well-developed industrial ecosystem for various industries including the food processing industry. The industrial hubs for food processing in the state are in Solapur, Ahmednagar-Nashik, Nagpur-Amravati region. The food infrastructure of the state includes eight specialised food parks, three mega food parks, three floriculture parks and three wine parks. Along with this, the state has promoted the setting up of mini food parks (Outlook, 2022).

Maharashtra is the leading exporter of agricultural produce. Ithas developed an agriculture export policy in accordance with the national agriculture export policy (Agriculture Export Policy of Maharashtra State, 2019).The state has a well-functioning agriculture marketing system in comparison to other states with the Maharashtra State Agricultural Marketing Board (MSAMB) which supports the establishment of agro-export zones, training centres, grading and packing facilities and so on. Maharashtra had the highest number of agri-export zones with eight zones. The state is also atthe forefront ofimplementing marketing reforms in agri-business. The top exportable commodities from the state have been identified on a cluster basis in the export policy and commodity-specific and generic measures are to be implemented to boost the potential of these commodities (Agriculture Export Policy of Maharashtra State, 2019). The state also leads in terms of having the maximum number of packhouses in the country (Tantri, 2022).

The successive industrial policies in the state also provided support in the form of incentives, subsidies, waivers, infrastructure development and thereby facilitating ease of doing business. The Maharashtra Industrial Policy, 2001 introduced as part of the second phase of economic reforms was the first industrial policy to emphasise the food processing sector. The state provided thrust to the food processing sector by developing specialised industrial areas for the industry called food processing zones in 2001. In this regard, the 'grape wine parks' were setup in Nashik and Sangli, "Orange City Park' aimed at orange processing and floriculture and biotechnology farms were set up. In the succeeding state industrial policy of 2006, food processing was again identified as a thrust sector and the state brought out an agro-processing policy particularly emphasising the sector. The state continued to provide investment subsidies for capital investment in the thrust sectors that were identified. Cluster development was also given focus in this policy and special incentives were given to the agro-processing industries for setting up industrial clusters and SEZs were promoted to boost exports. In this industrial policy as well, there was a continuation of the fiscal and financial incentives and subsidies given to industries. The state also emphasisedon improving the infrastructure facilities as well as the marketing arrangements.In the subsequent industrial policy in 2013, the state gave priority to ease of doing business by simplifying procedures for setting up and running industries. The cluster-focused approach of industrial development was continued in this policy as well with industries setting up industrial clusters and SEZs being given additional incentives. The policy aimed at creating 2 million additional employment and providing additional incentives to employment-intensive industries was adopted as a strategy to achieve this goal and the policy identified agro-processing as the thrust sector. In the industrial policy, 2019, the agro-processing industry continued to be the thrust sector, particularly the secondary and tertiary processing units. The policy has proposed the setting up of mini food parks in all districts of the state with infrastructure support based on commodity requirements and special incentives for the sector has also been proposed.

The state introduced the AgroIndustrial Policy, 2010, designed to tailor policy solutions according to the specific needs of the sector. The policy focused on strengthening the core sectors with interventions to make these sectors commercially viable by taking advantage of the potential of different areas in the state. For this purpose, regions have been identified based on their strength in the

production of commodities, aiming at cluster development with end-to-end integrated value chains to make the industry competitive, both domestically and globally. These clusters identified will have producers, processors, supporting institutions etc. The policy also devised measures to attract large investments into the industry to boost the extent of value addition being done in the state. The policy also aims at supporting food parks, improving post-harvest infrastructure, market infrastructure and linkages, promoting of processed food quality and safety and provision of several fiscal incentives for agro-industrial units (Agro-Industrial Policy, 2010).

The Agro-Industry Policy 2010 was followed by Maharashtra Food Processing Policy 2017. The policy accorded priority to enhancing the ease of doing business in the industry with the introduction of a single-window clearance system. The policy also aimed at strengthening the infrastructure facilities for agricultural marketing, facilitating the availability of quality raw materials by amending the APMC Act, improving logistics infrastructure, fiscal incentives and relaxed labour laws.

Uttar Pradesh is among the largest producers of agricultural commodities in the country with the state being the largest producer of vegetables, wheat, maize, sugarcane, potato, meat and milk. The state is also a major producer of a large variety of fruits and fish. The state has also witnessed a transformation in production pattern from traditional crops to high-value commercial crops and this transformation is supported by the varied agro-climatic condition (nineagro-climatic zones) of the state making it favourable for the production of a variety of food and non-food items (Mehta, 2012). The abundant supply of raw materials is a major factor in the better performance of the state in the food processing industry. Along with this, the state has a substantially large consumer base with its huge population and proximity to consumer states.

Uttar Pradesh has had a food processing sector policy, separate from the industrial policy of the state. The Food Processing Policy, 2004 proposed several enablinginterventions; both fiscal and financial. The policy also aimed at rationalisation of procedures for setting up units and also in setting up development zones based on geographical strengths in production. The policy also aimed at setting up more food parks and strengthening the existing food parks. Support was also envisaged in the form of improving marketing arrangements, warehousing and improved quality of produce. The subsequent Food Processing Policy 2012 gave priority to infrastructure development in the sector. Identification of food processing zones based on raw material availability and suitability in setting up food processing units was emphasised in the policy. The setting up of mega food parks, food parks and centres of excellence was also encouraged in these identified zones. The fiscal and financial incentives proposed in the Uttar Pradesh Infrastructure and Industrial Investment Policy 2012 were to be extended to the food processing industry as well. The policy aimed at further improvement in ease of doing business in the sector aided by the implementation of a single window clearance system (Udyog Bandhu). The policy also aimed at attracting capital investment and technology upgradation through grants and concessions.

The Food Processing Industry Policy 2017 also followed on the same lines asthe 2012 policy by making provisions for improving infrastructure facilities, identification of food processing zones, provision of fiscal, financial and export promotion schemes and so on. The state industrial policy 2017

identified the Food Processing sector as having immense potential for capital investments, employment generation and an increase in rural income of the state. Therefore, developing the state into a food park state is one of the objectives ofthe Industrial Investment and Employment Promotion Policy of Uttar Pradesh 2017. The policy provides various facilities and incentives to promote this sector under the "Mukhya Mantri KhadyaPrasansakaran Mission Yojana".

The thrust to develop the sector based on a cluster development approach did not bearfruit in the state as most of the industries are located in well-developed and developing agro regions (central agro region and Tarai and Bhabar region) of the state (Mehta, 2012). It was also seen that the presence of a large food processing industry in the state is hugely on account of the raw material availability which is made evident from the location of the processing units based on the agro produce of the regions. The review of state-specific factors and policies from the best-performing states gives an understanding of how states with strong raw material bases can boost the performance of the sector by policy measures.

From the above discussion it can be concluded that even though the food processing industry is a major industry in a majority of the Indian states, there is a regional imbalance in the level of development of the industry with certain states being exceptional performers while other states are lagging. The study has identified the reasons for these regional disparities to be largely on account of the raw material availability, consumer base, infrastructure and logistics facilities and also the policy support provided in the form of incentives and grants to the units in the industry.

SUMMARY

In this paper, the presence of the food processing industry in the Indian economy along with its growth trajectory was analysed. The industry has been on a growth path post-2000 due to the increased policy attention towards the sector and the subsequent investment into the sector from both domestic and international investors. The sector is the largest employment provider in the organised industrial sector, though employment elasticity has declined over the years. There has been an influx of investment into the sector particularly post the relaxation of FDI rules towards the sector. At the disaggregate level, the manufacture of other food items (107) which include the manufacture of bakery products, sugar, cocoa, chocolate and sugar confectionery, macaroni, noodles, couscous and similar items, prepared meals and dishesand other food products n.e.c is the best-performing sub-sector in terms of gross value added, employment, output and investment. In terms of number of factories, the sub-sector comes in second place. The*manufacture of grain mill products, starches and starch products* is also a key sub-sector and has the largest number of factories, and comes second in terms of GVA, employment, output and investment. In terms of GVA per factory, the *processing and preserving of meat and meat products* is the best performer followed by *manufacture of beverages*. With regards to employment per factory, again the *processing and preserving of meat and meat products* sub-sector is the leading performer followed by *processing and preserving of fish and fish products.* However, these sectors attract low

investment. Policies to boost investment into these sectors can be a key driver for the industry as they are industries with untapped potential for India with its large marine and livestock supply.

At the sub-national level, it was found that there is a regional imbalance in the growth of the industry. The states that have invested heavily in the industry seem to be performing better than other states. A suitable investment climate is thus required for the boosting of the industry at the state level. However, the disaggregate study has also revealed the key factors that determine the industry performance such as the availability of raw materials within the state and consumer base, along with the investment in the sector, particularly in terms of logistics facility. We sum up the paper by arguing that the FPI sector has a huge role to play in doubling farmers income, besides providing alternative employment opportunities for disguised unemployment in the agriculture sector. This requires moving away from the "one-size fit policy" for the FPI. As it is very important to have further disaggregate level analysis through case study approach across product and states. This will also facilitate addressing state-specific infrastructure bottlenecks and streamlining institutional structure for the same.

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Appendix A1

National Industrial Classification (NIC) for food processing industry

Group	Description
10	**Manufacture of food products**
101	Processing and preserving of meat
102	Processing and preserving of fish, crustaceans and molluscs
103	Processing and preserving of fruit and vegetables
104	Manufacture of vegetable and animal oils and fats
105	Manufacture of dairy products
106	Manufacture of grain mill products, starches and starch products
107	Manufacture of other food products
108	Manufacture of prepared animal feeds
11	**Manufacture of beverages**
12	**Manufacture of tobacco products**

Appendix A2

Abbreviation

Andhra Pradesh	AP
Gujarat	GUJ
Haryana	HAR
Karnataka	KA
Madhya Pradesh	MP
Maharashtra	MH
Punjab	PUN
Tamil Nadu	TN
Uttar Pradesh	UP
West Bengal	WB
Kerala	KL

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