**A Sectoral Analysis of the Food Processing**

**Industry in India and Haryana: Employment and Export Perspectives (2000-2023)**

**Abstract:**

The study emphasizes on understanding the role of food processing industries in generating employment in exports. The focus is to underscore its contribution in employment generation in the manufacturing industry as a whole along with the trend of exports from this industry in last 15 years (2008-09 to 2022-23). The study utilizes time-series data from the official reports of ASI, NSSO and APEDA to study the trends in the variables under study. The number of units of FPI was found to decline from 18.6 per cent to 16.76 per cent in the Indian manufacturing industry. In Haryana, the number of units of FPI has decreased from 12.99 per cent to 9.36 per cent. The share of persons employed of FPI in the Indian manufacturing industry declined from 20.34% to 12.01 per cent. While in Haryana, the share of persons employed of FPI in the manufacturing industry declined from 15.59 per cent to 7.99 per cent. The share of FPI in the total exports from India found to increase from 4.51 per cent to 7.87 per cent. A comprehensive effort is needed in the area of physical and market infrastructure with rebate in tax to strengthen the processing activities.

Keywords: industry, market infrastructure, rebate in tax, ASI, NSSO and APEDA

**Introduction:**

Modern urban lifestyle has generated noteworthy demand for the convenience food with advanced processing. In spite of health concerns, the convenience created by the advanced processing for the consumers is the major for its current demand. The food processing industry has a key role in increasing the shelf life and value addition to the agricultural produce and not less in reducing the post-harvest losses. India is emerging as a sourcing centre for the processed foods manufacturing, given its abundant livestock, huge agricultural base and the cost-competitiveness. Consumption in India is driven towards ready to eat and branded packed food along with the increased spending power which is being supported by higher income levels. Indian food processing industry is mainly composed of private organizations holding 80 per cent shares while remaining 20 per cent are shared by co-operatives, handloom and khadi industry and by Public limited Companies. Being one of the most heterogeneous sectors of manufacturing, it covers a range of subsectors including agriculture produce, plantation, horticulture, fisheries and animal husbandry. Haryana has taken lead in industrial development over its neighboring states and has become most preferred destination for auto major and compound manufacturers. The state’s share in organized manufacturing segment has surpassed its share in population and area. Haryana has witnessed high industrial growth since its formation. Before 1947, only 5 per cent of registered factories in India were located in Punjab. And among the districts of present Haryana, highest units were located in Ambala while other states had a handful of units only. Moreover, the state had only 18 medium and large-scale units and 9 of them were located were in Ambala only while Bhiwani and Faridabad has 3 and 5 units respectively. Haryana has come so far in terms of industrial development which is further being supported by New Industrial Policy, 2015. A number of factors favored the industrial development including agro-climatic conditions, suitable law and order and many more. Including Haryana, Maharashtra, Uttar Pradesh, Tamil Nadu and Gujrat constitute a large chunk of total industrial production. Among all these states, Haryana ranks high on many indicators of registered manufacturing sector of India, with fifth rank in net value added and sixth rank in terms of output. Moreover, the number of operational units increased 9.67 times and number of workers employed increased 12 times from 1966 to 2014. During the period 1980-81 to 1990-91, manufacturing industry of the state was at its boom in terms of output growth. During the period 1980-81 to 2015-16, share of the manufacturing industry in state gross domestic product increased from 13.65 per cent to 19.23 per cent and during the same period, share of the state has improved in the manufacturing output of the country from 2.54 per cent to 4.49 per cent. During 2010-11 to 2014-15, the industry was growing at the rate of 8.02 per cent, higher than the national average.

**Literature:**

(Gill & Ghuman, 1982) in their study analysed the trends in agricultural exports from India. The share of Indian agricultural exports was found to fell from 47.55 per cent to 33 per cent in total production over the time period from 1970-71 to 1979-80.(Athukorala & Sen, 1998) in their study analysed the importance of FPI in total exports of 37 developing industries. The study found the share of FPI in exports increased from 30 percent to 41 percent over the time period from 1970-94, moreover, the countries from high- and middle-income groups performed better than the lower income groups.(Gandhi, Kumar, & Marsh, 2001) in a study analysed the organisational models experimented in India to organise the agro-industrial sector and the Amul cooperative model was found to the most promising model ensuring benefit to small farmers. (Parthasarathy, 2008) in his study did a detailed analyses of Indian agricultural export at sub-sectoral level over a period of three years. The share of exports increased from 9 per cent to 15 per cent and from 15 per cent to 22 per cent in terms of quantity and value respectively. In another article, (Shelly & Kaur, 2015) studied the development experience of India in relation to food industry and its share in GDP of the economy. The percentage share of unregistered FPI in GDP has declined between 2005-06 and 2011-12 meanwhile the percentage share of registered FPI has increased for the same period. The per cent share of exports from the FPI sector increased over the time period from 2006-07 to 2012-13. (Kumar, Dixit, Kumar, & Singh, 2010)in an article attempted to analyse the growth of agro-processing industry in Haryana in terms of employment generation, output and factor affecting growth from 1980-81 to 2010-11. Cereals and pulses milling units were growing with 5.34% per year and the highest share in employment was contributed by the Jaggery & Khandseri industry. (Hussain & Yadav, 2016) in their study analysed the performance of manufacturing sector of India, specifically the FPI. The exports from the agriculture and processed food products increased significantly over the time period from 2009 to 2015.(Shukla, 2019)in a study tried to evaluate the evolution, trade pattern and status of processed food manufacturing, beverages and tobacco products over different parts of the world. The share of processed food in the world exports remained stable over the years. The study revealed highest comparative advantage of India in grain mill products, whereas the share of vegetable, animal oils and fats had come down over the reference period. (Kukreja, 2021) in his study tried to measure the employment growth of Indian States in case of organized Fruit & Beverage sector for 17 major states over the years from 1999-20 to 2015-16. A considerable share of employment was generated by the prepared animals feed units, meat and fish processing units and the units in fruit and vegetable processing. Employment was higher in Andhra Pradesh, Maharashtra and Tamil Nadu and lower in Bihar, Jharkhand and Odissa in the organized food processing sector. The employment growth was positive for all the states except Andhra Pradesh and even more than 4 per cent in agriculture-based states, namely, Jharkhand, Bihar, Uttarakhand, Rajasthan and Madhya Pradesh. The states with rigid labour regulations revealed high growth in employment compared to states adopting flexible labour regulations. (Ardolino, Bacchetti, & Ivanov, 2022) in their study of covid‑19 pandemic’s impacts on manufacturing found that the covid impacted the global economy drastically, especially the manufacturing sector. The direct impact was recorded in terms of shutting down of units, fluctuations in the demand and supply and changed consumer behaviour. (Massoud & Zoghi, 2024) analysed the impact of covid on global food system and found that the pandemic disrupted the global supply chain dua to a number of factors. The factors included were travel restrictions, shortage of workers and of agri-produce inputs and most importantly the change in consumers’ taste and preferences. These factors resulted in inflated food prices while inadequate distribution system along with preventive measures further fuelled to food shortages. Moreover, there was a decline in the investment in the food system which exacerbated the situation. A study conducted by ILO recorded major structural shifts were recorded between 2000-2019. There was an increase in regular formal employment in the manufacturing and the service sector with an increase in capital intensity and labour productivity. Food manufacturing sector was among the largest employers and the processing and preserving of fish, crustaceans and molluses recorded CAGR of 11.3 per cent from 2000 to 2019. While the overall employment growth rate was declining. Within a period of just three to four years, after pandemic, the growth of employment in primary sector surpassed the entire decline in the sector from 2000-2019. This rise in employment resulted from a shrink of employment opportunities outside the agriculture sector and more particularly due to employment crises carried by the pandemic.

**Data base and methodology:**

The study is based on secondary sources of data, utilised from the reports of NSSO and annual survey of industries, government of India. The study is descriptive in nature and used descriptive statistical tools. The study utilised time series data on number of manufacturing units, number of workers employed from annual survey of industries. The share of the food processing industry in employment has been calculated as percentage share of the number of workers and number of establishments in the manufacturing industry of Haryana. And the share of the food processing industry of India has been calculated in terms of number of establishments and number of workers in the manufacturing industry of India. The share of exports from the FPI has been calculated as percent share of total exports from the state. And the share of exports from the food processing industry of India in total exports has been analysed.

**Results and discussion**

**Table: 1**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **NSSO Rounds** | **Unorganized sector** | **Growth****rate** | **Organized sector** | **Growth** **Rate** | **Total number of Workers** | **Growth-rate** |
| 2000-01 | 37080791 |  \_ | 6135238 |  \_ | 43216029 | \_ |
| 2005-06 | 36442799  | **-1.72** | 7136097   | **16.31** | 43578896  | **0.83** |
| 2010-11 | 34888434   | **-4.26** | 9901970  | **38.75** | 44790404   | **2.78** |
| 2015-16 | 36041319  |  **3.30** | 11136133\*  | **12.46** | 47177452   | **5.32** |

**Status of Number of Workers in India (Manufacturing)**

Table 1 shows distribution persons engaged in the organised and unorganised manufacturing industry in India. The unorganised segment dominates the organised sector in terms of number of workers employed, but the difference between the two decreased over the years. The number of workers in the unorganised segment is 6.04 times of the number of workers in the organised segment in the year 2000-01 which keep on decreasing in the following years of study. In the year 2005-06, the ratio between the two segments was 5.1:1 and in the year 2010-11 it decreased to 3.5:1 and again decreased to 3.52:1 in the year 2015-16. The organised segment recorded positive growth rate over all the year while the unorganised segment recorded negative growth in the number of persons engaged from 2000-01 to 2010-11.

**Table- 2**

**Status of Number of workers in Haryana (Manufacturing)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **NSSO Rounds** | **Unorganized sector** | **Growth rate** | **Organized sector** | **Growth rate** | **Total Workers** | **Growth rate** |
| 2000-01 | 420350 | \_ | 300882 | \_ | 721232 | \_ |
| 2005-06 | 544024 | **29.42** | 305740 | **1.61** | 849764 | **17.82** |
| 2010-11 | 467773 | **-14.01** | 427346 | **39.77** | 895119 | **5.33** |
| 2015-16 | 418405 | **10.55** | 559426\* | **30.90** | 977831 | **9.24** |

(\*) average of 2014-15 and 2016-17

Table 2 shows the distribution of persons over the organised and unorganised segment of the manufacturing industry in Haryana. The number of workers in the unorganised segment is 1.39 times of the number of workers in the organised segment in the year 2000-01 which increased to 1.77 times 2005-06 and in the years 2010-11 the ratio between the two segments decreased to 1.09:1. Also, the growth performance in the number of workers have been more promising in the organised segment when compared to the unorganised segment. The organised segment recorded positive growth rate over all the year while the unorganised segment recorded negative growth in the number of persons engaged from 2005-06 to 2010-11.

**Table- 3**

**Status of Number of Establishments in India (Manufacturing)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **NSSO rounds** | **Unorganized Sector** | **Growth rate** | **Organized Sector** | **Growth rate** | **Total** | **Growth rate** |
| 2000-01 | 17024104 | - | 131268 | - | 17155372 | - |
| 2005-06 | 17070820 | **0.27%** | 140160 | **6.77** | 17210980 | **0.32** |
| 2010-11 | 17210269 | **0.81%** | 211660 | **51.01** | 17421929 | **1.22** |
| 2015-16 | 19664875 |  **14.26** | 233116\* | **10.13** | 19897991 | **14.21** |

(\*) average of 2014-15 and 2016-17

Table 3 shows the status of number of units in the organised and unorganised segment of Indian manufacturing industry. The number of units in unorganized sector 129 time than in the organized sector in the year 2000-01. The ratio between the two decreased in the year 2005-06 to 121:1 and decreased to 81:1 in the year 2010-11, the ratio between the two segments increased to 84:1 in the year 2015-16. The number of establishments in the organized and in the unorganized sector increased in absolute terms over the study period. The number of units in the organized sector increased from 131268 in the year 2000-01 to 233116 in the year 2015-16, and in the unorganized sector it increased from 17024104 in the year 2000-01 to 19664875 in the year 2015-16.

**Table- 4**

**Status of Number of Establishments in food processing industry in India**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **NSSO rounds** | **Unorganized Sector** | **Growth rate** | **Organized Sector** | **Growth rate** | **Total** | **Growth rate** |
| 2000-01 | \_ | \_ | 23988 | \_ | \_ | \_ |
| 2005-06 | 5520957 | \_ | 25725 | **7.24** | 5546682 | \_ |
| 2010-11 | 4482870 | **-18.80 %** | 35840 | **39.31** | 4581710 | **17.39** |
| 2015-16 | 5735046 | **27.93 %** | 39319\* | **9.70** | 5774362 | **26.03** |

(\*) average of 2014-15 and 2016-17

Table-4 shows the growth in the number of establishments in the FPI in India in organized and unorganized sectors over different years. The number of units in the organised segment increased from 23988 to 39319 over the study period. And the number of workers in the unorganised segment increased from 5520957 to 5735046 over the period from 2005-06 to 2015-16. In the year 2005-06 the ratio between the unorganised and unorganised segments in terms of number of units was 214:1 which increased to 125:1 in the year 2010-11 and to 145:1 in the year 2015-16. The unorganised segment faced negative growth rate over the period 2005-06 to 2010-11 and the organised segment recorded growth rate of 39.31 per cent.

**Table- 5**

**Status of Number of Establishments in Haryana (Manufacturing)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **NSSO Rounds** | **Unorganized Sector** | **Growth rate** | **Organized Sector** | **Growth rate** | **Total** | **Growth rate** |
| 2000-01 | 193301 | \_ | 4448 | \_ | 197749 | \_ |
| 2005-06 | 230110 | **19.04** | 4304 | **3.23** | 234414 | **18.54** |
| 2010-11 | 189662 | **-17.57** | 5967 | **38.63** | 195629 | **-16.54** |
| 2015-16 | 182923 | **3.55** | 7953 | **33.28** | 190876 | **-2.42** |

**Source:** NSSO, ASI, GOI

Table-5 shows growth in the number of establishments in the manufacturing industry in Haryana. Units in the unorganised sector has decreased from 193301 in to 2000-01 to 182923 in 2015-16 while in the organised segment there was absolute increase in the number of units from 4448 to 7953 from 2000-01 to 2015-16. The number of establishments in the unorganized sector is 43.45 times to that of the organised segment in the year 2000-01 which increased to 53.46 times in the year 2005-06 which dropped to 31.78 times in year 2010-11 and further to 23.0 times in the year 2015-16. The organised segment of the manufacturing industry has recorded positive growth in the study period and very high growth rate during the decade 2005-06 to 2015-16 while the unorganised segment recorded low growth over the same time period.

**Figure - 1**

**Status of FPI in number of Factories in manufacturing industry**

Figure 1 shows the share of number of factories of FPI in the manufacturing industry over last 15 years. The share of FPI of Haryana in number of units decreased from 11.33 per cent to 9.69 per cent over a period of 15 years. The share of Indian FPI in number of units in the manufacturing industry increased from 17.26 per cent to 17.61 per cent from 2008-09 to 2022-23. In the year 2009-10, the of FPI of Haryana revealed a decline when there was a major drought in the country. In 2018-19, the direct impact of GST implementation can be seen in terms of falling number of units of the FPI of Haryana and of India as well.

**Figure 2:**

**Share of Workers in the FPI in Manufacturing industry**

Figure 2 shows the share of FPI in terms of persons employed in the manufacturing industry over last 15 years. The share of FPI in Haryana decreased from 15.59 percent to 8.51 per cent over last 20 years. The share of Indian FPI also decreased from 20.34 per cent to 12.41 per cent over the same time period. The pandemic of the year 2019-20 has impacted the industry, revealed in the falling part of the graph. In the year 2009-10, FPI in Haryana recorded a drop in the persons engaged, the year of major drought with overall decline in the foodgrain production in India. In the year 2011-12 the persons engaged in the FPI of Haryana dropped to 8.47 per cent of total worker.

**Figure 3:**

**Exports of major processed food products from Haryana**

Figure 3 shows the status of exports of processed food products from Haryana from 2008-09 to 2023-24. As shown in figure, value of export from cereal preparations increased from Rs.8.27 lacks to Rs. 26040 lacks over the study years while exports of dairy products recorded very high fluctuations and increased from Rs. 7732 in 2012-13 to Rs. 12967.15 in 2021-22 but dropped to Rs. 8745.84 in 2022-23. Exports of milled products increased from Rs. 0.73 lacks in 2009-10 to 1599.11 in 2023-24. Exports of processed vegetables increased from Rs. 57.91 lacks to Rs 4198.4 lacks in 2023-24. Exports jaggery and confectionary products increased from Rs. 0.38 lacks in 2009-10 to Rs.4966.44 lacks in 2023-24.

**Figure 4:**

**Exports of Basmati and non-basmati rice from Haryana**

Figure 4 shows the status of the exports of basmati and non-basmati rice from Haryana. The exports of basmati rice increased from Rs. 93954.07 lacks to Rs. 1311998.56 lacks from 2008-09 to 2023-24. Exports of non-basmati rice increased from Rs 219.78 lacks in 2008-09 to Rs. 52796.24 lacks in 2023-24. Exports of Processed fruit, juices and nuts increased from Rs. 2130.49 lacks in 2008-09 to Rs. 31944.48 lacks in 2023-24.

**Conclusion and policy recommendations**

The FPI is losing its status in terms of number of factories and number of workers employed in the manufacturing industry. The industry has been losing its share not only in the number of factories and persons employed but in terms of net value added, output, working capital and invested capital also (Ipshita & Bala, 2025). This declining share suggests a number of possibilities including closing down of units, increasing capital intensity and informalization of labour. During 1991‑2018, fixed capital and output in FPI grew in the range of 6-10 per cent per annum, but employment increased by 1.9 per cent and the number of workers per factory dropped. Also, the share of manufacturing of GDP remained within the range 15–17 per cent while its share in employment dropped from about 12.6 per cent to 11.4 per cent from 2011-12 to 2023-24 (Rais, Acharya, & Sharma, 2013). The average working capital intensity for the period 2008-09 was recorded at 218.54 and raw material intensity was recorded at 79.25. Higher capital intensity paves way for more technological advancements while high raw material intensity creates more backward linkages by creating demand for raw material (Ipshita & Bala, 2025).

In the organized segment, the number of factories of FPI in India decreased from 18.6 per cent to 16.76 per cent. In Haryana, number of units of FPI decreased from 12.99 per cent to 9.36 per cent from 2004-05 to 2021-22. Its share in the number of workers in the manufacturing sector declined in India from 20.34 per cent to 12.01 per cent and in Haryana from 15.59 per cent to 7.99 per cent. The food industry recorded improvement as share of total exports of India increased from 4.51 per cent in 2008-09 to only 5.87 per cent in 2022-23. Despite stable agriculture produce, the state has witnessed investment plummet by more than 50 per cent in the manufacturing sector during 2022-23. Agro and mega food parks are under implementation in Ambala, Jind, Sirsa and Sonipat, but export capacity still remains the same (Kumar, et al., 2020). But exports of only basmati rice and of cereals preparations recorded improvement over last one and a half decade. Exports of non-basmati rice, milled products and of jaggery and confectionary did not reveal a positive trend as shown in case of basmati rice. Exports of dairy products recorded major fluctuations over the study years. State’s dairy products market is expanding with a CAGR of 11.3 per cent but the nature of market is largely domestic and there is less focus on exports. Only about 2 per cent of fruits & vegetables are processed nationally, lack of adequate pack-houses, cold storage, and processing units leads to 30–40 per cent post‑harvest losses, with similar trends in Haryana (Kumar, et al., 2020). Which is evident in lower exports of processed vegetables, fruit, juices and nuts over last 16 years. Low export from the industry concerned is due to inadequate post-harvest facility, fragmented supply chain, low investment and delayed export policies. Government of Haryana introduced a scheme named, “Bhavantar Bharpai” to incentivize the cultivation of specific vegetables but do not boost exports as focus being the domestic price support (Chari, 2018). Report of Haryana enterprise policy 2015 highlights the needs to invest in developing infrastructure in post-harvest management which will help in cost effective and smooth raw material supply. The state should ease the land acquirement for post-harvest procedure. A comprehensive effort is needed in the area of physical and market infrastructure with rebate in tax to strengthen the processing activities.

**Disclaimer (Artificial Intelligence)**

Authors hereby declares that no generative artificial intelligence technologies is used during writing or even editing this manuscript.

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**ANNEXURE-I**

**Share of Workers in the FPI in Total manufacturing sector in Haryana (in numbers)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Workers in Manufacturing industry** | **Workers in food processing industry** | **Share of food processing industry (in percent)** |
| 2008-09 | 377322 | 47082 | 12.47 |
| 2009-10 | 463570 | 39811 | 8.58 |
| 2010-11 | 427346 | 44760 | 10.23 |
| 2011-12 | 436925 | 37051 | 8.47 |
| 2012-13 | 431425 | 48818 | 11.31 |
| 2013-14 | 467741 | 41878 | 8.9 |
| 2014-15 | 580933 | 49518 | 8.52 |
| 2015-16 | 559426 | 57911 | 10.35 |
| 2s016-17 | 650051 | 66304 | 10.19 |
| 2017-18 | 674373 | 68637 | 10.17 |
| 2018-19 | 802213 | 90131 | 11.23 |
| 2019-20 | 1023667 | 80589 | 7.87 |
| 2020-21 | 1036575 | 83840 | 8.08 |
| 2021-22 | 1105726 | 88427 | 7.99 |
| 2022-23 | 1100915 | 93754 | 8.51 |

**Share of FPI Workers in Total Manufacturing Workers in India (in numbers)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Workers in Manufacturing** | **Workers in FPI** | **Share of FPI (in percent)** |
| 2008-09 | 8776745 | 1563518 | 17.81 |
| 2009-10 | 9157802 | 1605954 | 17.53 |
| 2010-11 | 9901970 | 1661597 | 16.78 |
| 2011-12 | 10438156 | 1776643 | 17.02 |
| 2012-13 | 10051626 | 1689175 | 16.80 |
| 2013-14 | 10444404 | 1741034 | 16.66 |
| 2014-15 | 10755288 | 1773939 | 16.49 |
| 2015-16 | 11136133 | 1813895 | 16.28 |
| 2016-17 | 11662947 | 1853851 | 15.89 |
| 2017-18 | 12224422 | 1933464 | 15.81 |
| 2018-19 | 12798588 | 2005286 | 15.66 |
| 2019-20 | 16624291 | 2032625 | 12.22 |
| 2020-21 | 16089700 | 2036874 | 12.65 |
| 2021-22 | 17215350 | 2068048 | 12.01 |
| 2022-23 | 18494962 | 2296654 | 12.41 |