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Rising Capital Intensity and Employment Potential of Indian Food Processing Industry

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ABSTRACT

In this paper, we have examined the capital intensity, financial performance and employment potential of the Indian food processing industry (FPI) using the industry-level data for 1980-2018. During the past three decades, capital intensity in FPI increased from Rs.0.07 to Rs.1.04 million per person. The employment growth is not appreciable as compared with the output growth in the food industry as a whole. However, in the recent period (2004-05 to 2017-18), the high growth rate of investment (11.64 per cent) coupled with an increasing trend in employment with the growth rate of 2.23 per cent per annum was noted. Despite increased capital investment, financial performance of the FPI in certain standard business parameters was found to be low, which may set back the investors. Employment pattern in the industry witnessed contractualisation of the labour force with rising demand for skill-oriented managerial and supervisory employees. This reorientation in the pattern of employment is also reflected in the wage distribution, where workers' wage share reduced to 52.55 per cent from 60.80 per cent, whereas it increased for the supervisory and managerial category from 16.54 per cent to 30.29 per cent in the total emolument. The results of estimated employment function showed the rising potential of FPI in generating employment alongwith rising capital intensity. Efforts are therefore need to be focused on the high-value commodities such as meat, fish, fruits and vegetables and feed industry to improve the output level which has more potential. Further, being a large contributor to the employment, grain industry can be expanded to the nutri-rich cereals, to absorb surplus labour in the country.

Keywords: Food processing industry, Capital intensity, Employment, Financial performance

JEL: L66, D24, E24, Q13

I

INTRODUCTION

Traditionally, agriculture being the principal source of livelihood, provided employment to more than 50 per cent of the households in India directly and indirectly. However, over the period, there has been a decrease in the total number of workers in agriculture with a sharp decrease in the number of cultivators (NSSO 2014; Government of India, 2018). This shift has also led to an increase in the number of agricultural labour, workers in the non-farm sector and other casual work. In some of the states, casualisation of labour force was also noted, particularly after 2004-05 (Nithyashree and Pal, 2013). This casualisation process is a distressing

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development for the country. At this juncture, the rural non-farm and manufacturing sector are expected to grow and absorb surplus labour in the country, which is also backed by technical progress (Radhakrishna, 2019). The food processing industry (FPI) particularly, is expected to grow fast in view of the fact that India is producing surplus food and horticultural crops, but a low level of processing (less than 10 per cent). In this context, various policy encouraging investments in the manufacturing sector in general and FPI in particular, have been taken up in the country. This has led to increased capital formation particularly after the 1990s. How far these developments have generated employment needs to be understood. Several studies have been carried out to study the employment in the manufacturing sector indicating the growth is not enough to create more employment in the 2000s (Das *et al*., 2009; Das and Kalita, 2009; Thomas, 2013). Recently, an increase in the capital intensity is reported to have a decreasing effect on labour in the manufacturing sector (Kapoor, 2016). However, the literature is scanty on the investment pattern and employment potential of FPI in the recent times. In this context, this study has been undertaken to analyse the pattern of capital intensity, nature of employment and financial performance of FPI in India.

II

METHODOLOGY

The industry-level data published in the *Annual Survey of Industries* (ASI), Ministry of Statistics and Programme Implementation (MOSPI) was used for this study. Gross Value Added (GVA) and capital series were deflated with Wholesale Price Index (WPI) for manufacturing products, manufacturing food products and machinery and equipment of the Office of the Economic Adviser, taking 2011-12 as the base price. The data for three decades from 1980-81 to 2017-18 were compiled to understand the trend in capital intensity and employment generation. The capital intensity was measured by the ratio of real fixed capital to total persons engaged. Fixed capital was measured as the depreciated value of fixed assets (land, building, plant and machinery, transport equipment etc.) which have a normal productive life of more than one year owned by the factory on the closing day of the accounting year, as defined by ASI. Total persons engaged include, directly employed workers, workers employed through contract, supervisory and managerial and other unpaid family members/proprietor. Industries were classified as capital intensive[1] if its value is more than or equal to the median value of all the industries in each year and the remaining industries were grouped as labour intensive. To see the trend in capital intensity in the FPI, the same approach was used, but, here the median value was considered across the sub-sectors within the food industry. Factor remuneration like profit rate, interest rate and debt rate was obtained as follows:

$$\text{Profit Rate} = \frac{\text{Profit}}{(\text{Invested capital} - \text{Outstanding loan})}$$

$$\text{Debt Rate } = \frac{\text{Outstanding loan}}{(\text{Invested capital})}$$

$$\text{Interest Rate } = \frac{\text{Interest paid}}{(\text{Outstanding loan})}$$

2.1 *Financial Performance Indicators*

For assessing the financial performance of the industry, certain standard business parameters were used, formulae and criteria to judge the financial health as follows:

$$\text{Current Ratio } = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Quick Ratio (Acid} - \text{test ratio)} = \frac{(\text{Current Assets} - \text{Value of Inventory})}{\text{Current Liabilities}}$$

$$\text{Receivable Days } = \frac{\text{Ending Accounts Receivables}}{\text{Annual Sales}} \text{ X } 365$$

$$\text{Payable Days } = \frac{\text{Ending Accounts Payable}}{\text{Annual Sales}} \text{ X } 365$$

$$\text{Inventory Days } = \frac{(\text{Opening Inventory} + \text{Ending Inventory})/2}{\text{Annual Sales}} \text{ X } 365$$

$$\text{Cash Conversion Cycle } = \text{Inventory Days} + \text{Debtor Days} + \text{Creditor Days}$$

The current ratio and quick ratio of value less than one indicate the weak financial status of the firm which may discourage the investors' attention. Receivable days, payable days and inventory days refer to the average number of days taken by a firm to collect revenue after a sale has been made, how long it takes a company to pay its invoices from supplier and number of days firm takes a company to sell its entire inventory, respectively. Less number of days is preferred, in general below 90. Cash conversion cycle measures the amount of time each rupee invested in the input is tied up in the production and sales process before it is converted into cash through sales. Alternatively, it measures the time between the outlay of cash and the cash recovery, shorter the cycle, better is the firm's financial health.[2]

2.2 *Employment Function*

The potential of generating employment in the FPI was examined by constructing frequently used employment function which shows the relationship between

employment, real gross value added (GVA) and real wage rate for the labour force. The specification of the function as follows:

$$ln(W) = a + b\,ln(Y) + c\,ln(WR) + \ dln(W_{-1}) + \ \alpha\ DT + u \qquad \ldots.(1)$$

where W implies the number of workers, Y is the real GVA, WR is the real wage rate, W_{-1} is the number of workers with one-year lag, u is the random error and DT is the intercept dummy which is time-variant and used to see whether employment generation has inclined by the liberalisation. Coefficient of ln (Y) is expected to be positive because an increase in output should increase employment. Again, the coefficient of ln (WR) is expected to be negative, with an increase in real wage rate should reduce employment. Further, ln (W_{-1}) is added, indicative of lag in the adjustment of actual employment to its desired level, the above model requires the coefficients of lagged employment to lie between '0' and '1'. The short-run elasticity of the employment with regard to output, i.e., GVA is given by 'b' and the long-run elasticity by [b/ (1-d)]. Similarly, the short-run elasticity of the employment with regard to real wage rate is given by 'c' and the long-run elasticity is given as [c/ (1-d)].

II

RESULTS AND DISCUSSION

3.1 *Structure of the FPI*

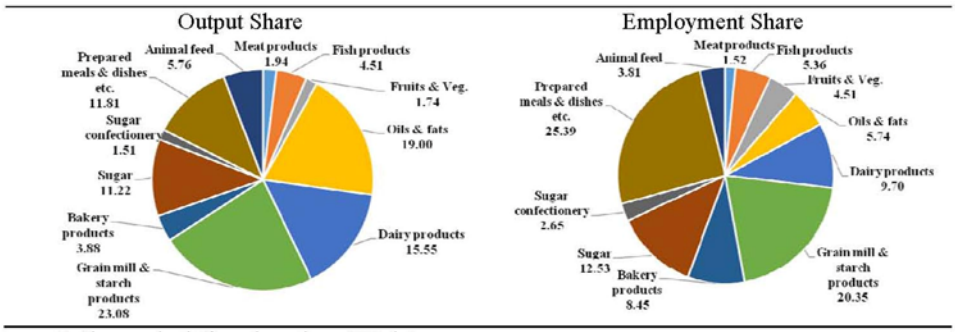
The Indian FPI is characterised by small units and located more in the rural area. As indicated in Table 1, around 37, 833 units are in the organised sector, of which 56.73 per cent are present in the rural sector. Spatially, around 90 per cent of the units are concentrated in 13 states with the highest number of units located in Andhra Pradesh (14. 21 per cent) followed by Tamil Nadu (11.89 per cent), Telangana (9.97 per cent) and Punjab (7.83 per cent). The distribution across the scale of operation and number of employment shows that the industry is dominated by small units and about 70 per cent of the units were operating with less than 100 employees and most of them are micro, small and medium in size and hardly 2 per cent of the firms are large with the turnover more than Rs.250 crore. Like any other manufacturing industry, FPI is mainly composed of the private organisations, viz., individual proprietorship, partnership and the limited companies which are contributed by 80 per cent in the industry as a whole and the rest 20 per cent is collectively shared by public limited companies, co-operatives, handlooms, khadi and other industries. Though there is an increasing trend in attracting investment in the recent period, particularly in the organised sector (Kumar, 2010), investment in research and development and foreign investment is meagre and they contributed by 0.84 and 1.09 per cent, respectively. Further, only 3 per cent of the firms attained the ISO certification.

TABLE 1. KEY INDICATORS CHARACTERISING STRUCTURE OF THE FPI

Indicators (1)	Per cent (2)	Indicators (3)	Per cent (4)
Sector		Type of organisation	
Rural	56.73	Individual proprietorship	29.01
Urban	43.27	Partnership	31.55
State		Public limited company	3.25
Andhra Pradesh	14.21	Private limited company	18.84
Tamil Nadu	11.89	Co-operative Society	1.98
Telangana	9.97	Others	15.37
Punjab	7.83	Scale of operation[#]	
Maharashtra	6.8	Micro	67.63
Karnataka	5.71	Small	23.52
WB	5.49	Medium	6.90
Gujarat	5.44	Large	1.95
UP	5.22	Firms having ISO certification	
Assam	4.01	With certification	2.89
Chhattisgarh	3.89	Without certification	97.11
Kerala	3.51	Firms with R&D unit	
Odisha	3.11	Yes	0.84
Avg. No. of persons employed		No	99.16
< 10	33.89	Share capital with foreign entity	
>= 10 and <100	35.81	Yes	1.09
>= 100	30.31	No	98.91
Total number of firms: 37,833			

Source: Authors calculations based on ASI data (unit records), MOSPI, 2017-18.
[#]based on the classification given in Annexure 1.

FPI itself has a wide range of products and broadly it can be grouped into eleven sub-sectors based on 4-digit classification given by National Industrial Classification (NIC), 2008. The sub-sectors contribution in terms of output and employment is presented in Figure 1. The industry output shares in constant terms indicated that the traditional sectors, viz., grain mill and starch products, dairy products, oils and fats and the sugar industry contributed around 68.85 per cent to the total output of the industry. Additionally, the share of an emerging product group – prepared meals and dishes (canned/cooked/ready to eat products) was 11.81 per cent. Employment

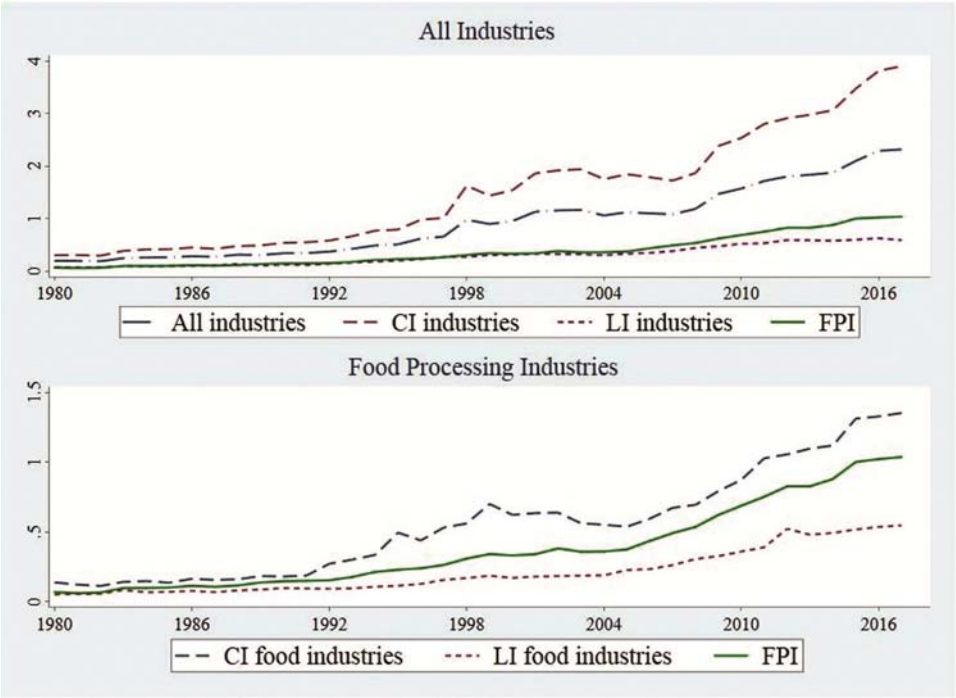


Source: Authors calculations based on ASI data.
Figure 1. Sub-sectors Share (per cent) in Output and Workers in the PI, TE 2017-18.

generation of this sector is always of interest to the various stakeholders in the country, wherein the FPI almost half of the persons employed are in the sub-sectors viz., prepared meals and dishes (25.39 per cent) and grain mill and starch products (20.35 per cent) followed by sugar, dairy and bakery products with the share of 12.53, 9.70, and 8.45 per cent respectively.

3.2*Capital Intensity, Employment Pattern and Growth in the FPI*

An increasing trend in the capital-to-labour ratio is evident to indicate rising capital intensity in the industrial sector in India. The trend in capital intensity in all the industries and FPI is plotted across labour and capital intensive industrial groups in Figure 2. The upper portion of the graph is indicating that the rise in capital intensity is not only a phenomenon in the capital-intensive industry, but the labour-intensive industries also raised its capital investment. The main point to be noted here is that the intensity in the food processing sector grew faster than the other labour-intensive industries particularly after 2005-06.During the past three decades, capital intensity in the FPI increased from 0.07 to 1.04, which is almost 15 times higher than



Source: Authors calculations based on ASI data.

Figure 2. All India Trend in Average Capital Intensity of Production in Food Processing Industries and Other Industries.

that during 1980 and 2018.The capital intensity trend across the labour and capital intensive food industry exhibits significant rise after 1991-92 and 2006-07, wherein capital intensive food industries grew almost 7 times from 1992-93 to 2017-18 and that of six times in the labour-intensive food industry. Some of the spill over benefits of changing the mind-set of the private investors in the 1980s (Rodrik and Subramanian, 2005) and policy initiatives in the liberalised era in terms of relaxing the restrictions on technology imports, delicensing, etc., have led to a significant increase in the capital investment, particularly after the 1990s (Kohli, 2006).Further, efforts to boost the level of competition through passing the Competition Act, 2002 and Micro, Small & Medium Enterprises Act, 2006 might have attained the level of improved investment in the industrial sector.

The rising capital investment particularly, in the labour-intensive industries including FPI, is a cause of worry for the country where the structural transformation from the primary sector to secondary and tertiary to absorb the surplus workforce becomes questionable. And also how far these capital investments will generate output and employment is a matter of concern. To see whether the capital intensive food industry lacks in employment generation but contribute to more value addition, growth rates of GVA, workers, fixed capital and pattern in capital to labour ratio were calculated over the period 1980 to 2018 for the FPI and these are presented in Table 2. This table shows that fixed capital growth surpassed the growth of GVA and workers with a trend growth rate of 9.31, 6.64 and 1.36 per cent per annum between 1980 and 2018. The growth rate of employment is not appreciable as compared with the output growth in the food industry as a whole. However, in the recent period, the high growth rate of investment (11.64 per cent) during 2004-05 to 2017-18, coupled with an increasing trend in employment with the growth rate of 2.23 per cent per annum is notable. This employment growth rate is the highest as compared with the decadal growth in the employment. Across the sub-sectors, traditionally dominated grain mills are more capital intensive in the recent past with the growth rate of real fixed capital 12.61 per cent and this pattern is also seen in the emerging product segment, i.e., dairy (16.94 per cent) and ready to eat /prepared meals product groups (13.59 per cent). Also, the growth of output in these industries is sizeable. But the expected employment generation is found to be low, particularly in the grain (0.49 per cent) and prepared meals (0.81 per cent) industry, which is a matter of concern. These two industry groups constitute around 50 per cent of the total employment share in the FPI. On the other hand, capital intensive food industries such as fish, fruits and vegetables, starch, feed and bakery products followed an increase in the growth rate of capital invested and GVA, along with increased number of workers. Exceptionally, sugar industry follows the path of increased capital investment and decreasing growth trend in output with a negative growth in the number of workers. Therefore, the mixed pattern of rising capital intensity, output and employment indicates the opportunity to explore the employment potential in FPI. The empirical evidence suggests that with increasing capital intensity and declining its productivity

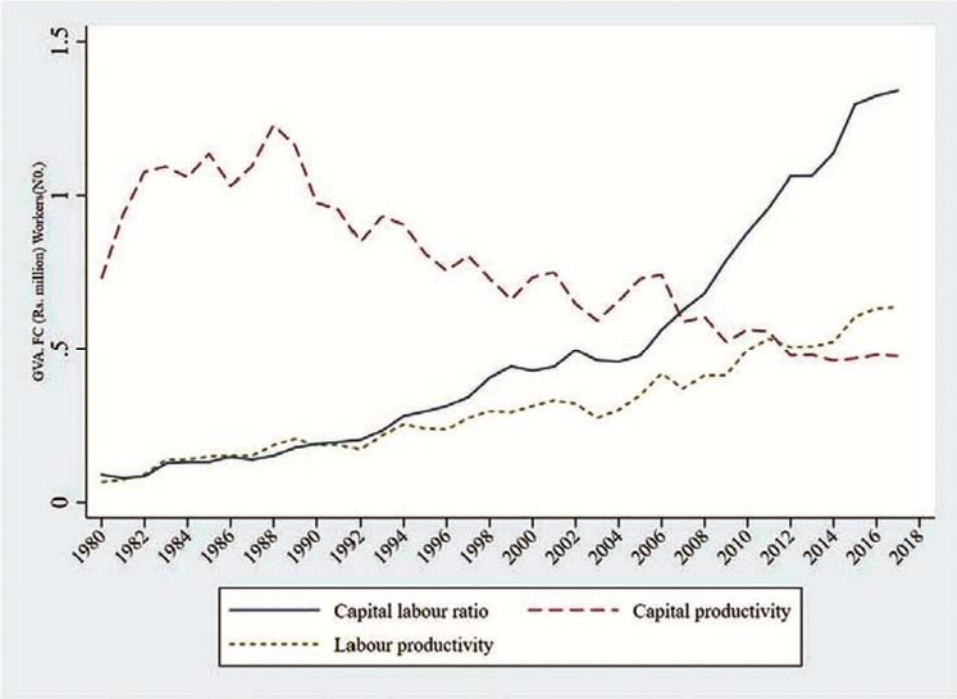
TABLE 2. SUB-SECTOR WISE TREND GROWTH RATE OF KEY INDICATORS OF PRODUCTION IN THE FPI

(in per cent)

(1)	FPI (2)	Meat products (3)	Fish products (4)	Processed Fruits & Veg. (5)	Oils & fats (6)	Dairy products (7)	Grain mill products (8)	Starch products (9)	Bakery products (10)	Sugar (11)	Sugar confectionery (12)	Prepared meals & dishes (13)	Animal feed (14)
	GVA												
1980-2018	6.64	12.99	8.92	11.65	6.34	8.92	8.15	8.52	8.71	3.57	13.8	5.53	11.53
1980-1992	8.43	5.79	10.01	6.68	9.54	13.31	7.33	0.77	10.5	7.37	18.65	8.17	11.16
1992-2003	5.41	8.26	3.2	15.95	2.87	14.08	6.87	9.39	7.42	3.32	15.7	2.35	10.55
2004-2018	7.74	11.18	14.94	13.29	2.78	9.13	7.84	10.99	11.27	2.8	8.27	10.63	14.69
TE 2017-18 ('000 Rs. crore)	817.24	15.2	31.19	37.11	73.62	101.83	126.39	12.79	54.37	120.2	31.35	172.32	40.87
	Workers												
1980-2018	1.36	7.83	5.54	5.95	1.06	4.34	1.83	3.36	4.65	-2.02	7.62	1.66	7.29
1980-1992	-1.44	-1.28	2.27	1.83	3.65	4.34	3.06	1.31	5.38	-5.35	8.68	-2	7.79
1992-2003	0.69	11.98	4.77	7.27	-3.72	2.46	1.78	6.6	1.73	-2.25	2.95	1.74	6.05
2004-2018	2.23	8.44	7.03	4.81	0.82	7.08	0.49	3.22	9.46	-1.04	9.19	0.81	8.36
TE 2017-18 ('000 in No.)	1307	22	63	59	74	127	250	19	95	165	35	351	46
	Fixed capital												
1980-2018	9.31	12.74	11.29	13.75	9.53	9.11	9.24	11.91	10.66	8.37	17.23	9.08	12.37
1980-1992	6.76	-1.18	1.76	8.74	14.2	6.34	5.16	4.64	9.77	4.95	23.86	8.68	6
1992-2003	9.04	20.79	13.6	18.59	5.49	9.42	7.85	16.61	10.46	9.09	15.59	7.62	15.6
2004-2018	11.64	8.25	11.36	11.87	7.07	16.94	12.61	16.75	13.65	9.34	20.49	13.59	19.32
TE 2017-18 ('000 Rs. crore)	1725	24	42	69	144	212	199	48	57	573	67	226	64
	Capital-labour ratio												
TE 1992-94	0.15	0.35	0.14	0.14	0.25	0.22	0.08	0.26	0.13	0.2	0.19	0.08	0.16
TE 2004-05	0.37	0.94	0.39	0.47	0.82	0.42	0.15	0.53	0.26	0.67	0.63	0.15	0.39
TE 2017-18	1.02	0.83	0.56	0.96	1.45	1.24	0.6	2.01	0.47	2.45	1.45	0.53	1.04

Source: Authors calculations based on ASI data.

indicate a substitution of capital for labour (Das *et al*., 2009; Ghose 1994). In this line, the rise in capital intensity with reduction in the productivity of capital during 1980-2018, indicates a capital substitution for labour in the FPI (Figure 3) and the same pattern is observed across all the sub-sectors as well (Table 3).



Source: Authors calculations based on ASI data.

Figure 3. Pattern of Capital Intensity and Factor Productivity in the FPI

TABLE 3. SUB-SECTOR WISE TREND GROWTH OF FACTOR PRODUCTIVITY IN THE FPI

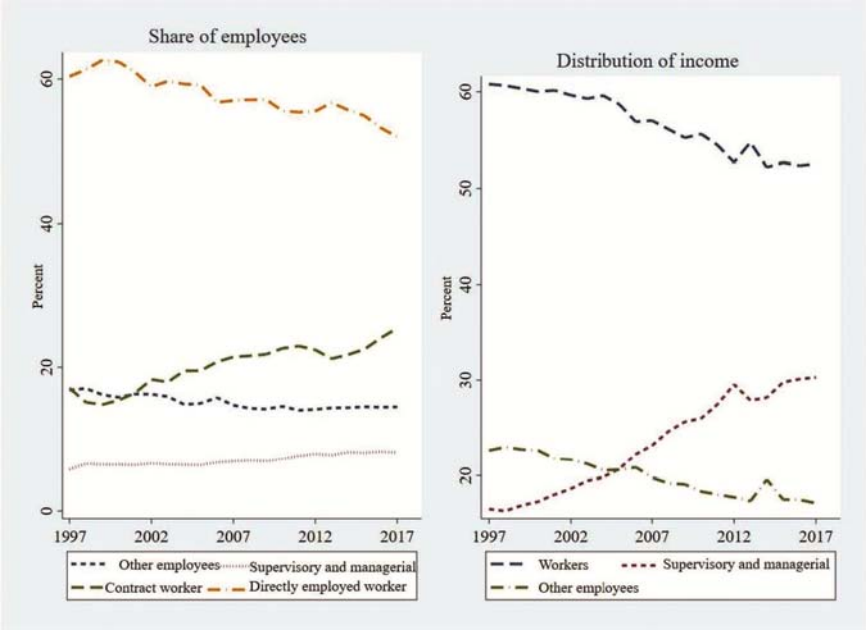
(*per cent*)

(1)	1980-1992 (2)	1992-2004 (3)	2004-2018 (4)	1980-2018 (5)	1980-1992 (6)	1992-2004 (7)	2004-2018 (8)	1980-2018 (9)
	Capital productivity				Labour productivity			
Meat products	7.05	-9.61	2.71	0.22	7.16	-6.04	2.53	4.78
Fish products	8.10	-7.88	3.22	-2.13	7.57	-1.96	7.39	3.20
Processed fruits and vegetables	-1.89	-1.99	1.27	-1.85	4.77	7.27	8.09	5.37
Oils and fats	-4.08	-2.26	-4.00	-2.91	5.68	6.18	1.95	5.22
Dairy products	6.55	4.98	-6.68	-0.17	8.59	12.18	1.92	4.38
Grain mill products	2.07	-1.10	-4.23	-1.00	4.14	5.82	7.32	6.21
Starch products	-3.70	-6.71	-4.93	-3.03	-0.54	0.87	7.52	4.99
Bakery products	0.66	-2.37	-2.09	-1.76	4.86	5.62	1.65	3.88
Sugar	2.30	-6.01	-5.99	-4.43	13.44	4.64	3.88	5.70
Sugar confectionery	-4.20	3.39	-10.14	-2.93	9.18	14.96	-0.84	5.74
Prepared meals and dishes etc.	-0.47	-4.65	-2.60	-3.26	10.38	0.91	9.74	3.81
Animal feed	4.87	-3.45	-3.88	-0.75	3.13	4.79	5.84	3.95
FPI	1.56	-3.29	-3.49	-2.43	10.01	4.47	5.40	5.21

Source: Authors calculations based on ASI data.

3.2.1 *Pattern of Employment, Factor Remuneration and Role of Skill Development*

While the adoption of capital intensive technology may weaken labour growth to a certain extent, but its impact on the quality of work via mechanisation and then skill upgradation is always expected. The share of different categories of workers in the total employment in FPI, presented in Figure 4,indicated that the share of workers who are employed directly (permanent workers) reduced to 51.99 per cent from 60.36 per cent and contract labour rose to 25.42 per cent from 17.10 per cent. The corresponding increase for the supervisory and managerial employees is 8.11 from 5.72 per cent and for the other employees, it is 14.48 from 16.82 per cent between 1997 and 2017. It shows that FPI experiencing contractualisation of the labour force on the one hand and raising demand for managerial and supervisory employees on the other hand. A similar trend is also mentioned in the manufacturing sector as a whole (Kapoor, 2016). Though we cannot generalise rise in the capital intensity for the reason behind contractualisation, in the long run,it may alter the wage distribution pattern across the workers. This can be seen from the exhibit presented in the right side Figure 4, wherein permanent workers' wages reduced to 52.55 per cent from 60.80 per cent with a significant rise in the payment to the supervisory and managerial category from 16.54 per cent to 30.29 per cent in the emolument paid to the employees during 1997-2018. These patterns might be due to the presence of stringent labour regulations and increased import competition led to reduced wages of



Source: Authors' calculations based on ASI data.

Figure 4. Distribution of Number and Income Across Employee Categories in the FPI.

informal workers to improve the competitive advantage and thus profitability (Goldar and Aggarwal, 2012).Also it might be due to the peak operational mandays of the food industry coincide with the harvesting period when wages are high. Across the sub-sectors, almost all the product groups experiencing contractualisation of labour and rise in the demand for managerial and supervisory employees that can be seen in their rising proportion across the employee categories from 2000-01 to 2017-18. Exceptionally, meat and fish industry demand more of permanent workers (Table 4). Therefore, the substitution effect of capital for labour is affecting more of the labour force.

TABLE 4. DISTRIBUTION OF EMPLOYEES ACROSS SUB-SECTORS IN THE FPI

(*'000 No.*)

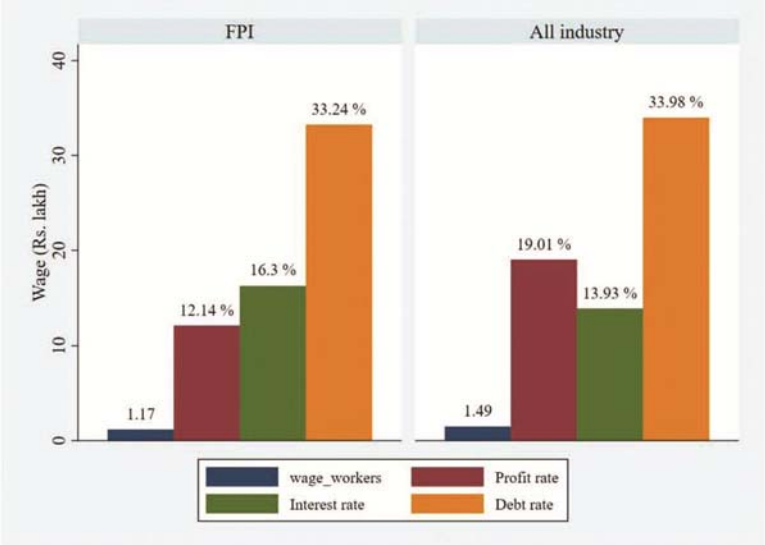
	Directly employed workers		Through contractors		Supervisory and managerial		Other employees		Total no. of persons engaged	
Sub-sectors	TE 2000-01	TE 2017-18	TE 2000-01	TE 2017-18	TE 2000-01	TE 2017-18	TE 2000-01	TE 2017-18	TE 2000-01	TE 2017-18
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Meat	2.43	11.54	3.14	10.93	0.39	2.89	0.64	3.17	6.59	28.53
Products	(36.89)	(40.44)	(47.55)	(38.31)	(5.87)	(10.14)	(9.69)	(11.11)	(100.00)	(100.00)
Fish products	10.52	44.26	13.30	18.93	2.87	4.75	7.48	6.64	34.17	74.58
	(30.78)	(59.34)	(38.91)	(25.39)	(8.41)	(6.37)	(21.90)	(8.91)	(100.00)	(100.00)
Processed	11.72	26.14	8.16	32.50	2.37	5.93	3.26	8.48	25.51	73.07
fruits and veg.	(45.94)	(35.78)	(31.99)	(44.49)	(9.29)	(8.12)	(12.78)	(11.61)	(100.00)	(100.00)
Oils and fats	49.78	48.11	19.72	25.89	9.05	10.48	16.55	15.04	95.10	99.52
	(52.35)	(48.34)	(20.73)	(26.02)	(9.52)	(10.53)	(17.40)	(15.11)	(100.00)	(100.00)
Dairy	37.86	67.95	11.18	58.74	9.29	16.00	20.19	28.07	78.53	170.76
products	(48.22)	(39.80)	(14.24)	(34.40)	(11.83)	(9.37)	(25.71)	(16.44)	(100.00)	(100.00)
Grain mill	128.90	151.51	80.16	98.90	17.16	30.69	36.41	51.36	262.63	332.46
products	(49.08)	(45.57)	(30.52)	(29.75)	(6.54)	(9.23)	(13.86)	(15.45)	(100.00)	(100.00)
Starch	14.80	13.38	1.44	5.86	1.46	2.09	1.85	2.93	19.56	24.26
products	(75.68)	(55.18)	(7.36)	(24.15)	(7.48)	(8.62)	(9.48)	(12.06)	(100.00)	(100.00)
Bakery	27.52	63.90	2.81	31.56	3.98	9.80	5.51	14.08	39.83	119.34
products	(69.11)	(53.54)	(7.04)	(26.45)	(10.00)	(8.21)	(14.12)	(12.04)	(100.00)	(100.00)
Sugar	182.69	121.45	35.95	43.76	18.24	20.29	78.45	47.96	315.32	233.46
	(57.94)	(52.02)	(11.40)	(18.75)	(5.78)	(8.69)	(24.88)	(20.54)	(100.00)	(100.00)
Sugar	8.91	22.66	0.97	12.03	1.42	3.64	1.94	7.59	13.24	45.91
confectionery	(67.27)	(49.34)	(7.34)	(26.20)	(10.76)	(7.93)	(14.63)	(16.53)	(100.00)	(100.00)
Prepared	293.24	299.74	7.57	51.34	12.31	24.34	28.05	49.32	341.17	424.73
meals-dishes.	(85.95)	(70.57)	(2.22)	(12.09)	(3.61)	(5.73)	(8.22)	(11.61)	(100.00)	(100.00)
Animal feed	9.61	29.94	5.03	15.62	2.08	6.68	4.46	9.80	21.18	62.04
	(45.35)	(48.25)	(23.76)	(25.18)	(9.81)	(10.76)	(21.08)	(15.80)	(100.00)	(100.00)
FPI	779.33	900.57	189.58	406.07	80.86	137.58	205.10	244.44	1254.87	1688.65
	(62.10)	(53.33)	(15.11)	(24.05)	(6.44)	(8.15)	(16.34)	(14.48)	(100.00)	(100.00)

Source: Authors calculations based on ASI data.

Note: Figures in parentheses are respective year percentage share of total no. of persons engaged

Increasing importance of skills complementing capital investment underscores the need for more skill-oriented programmes and schemes, in the core areas of the industrial sector including FPI. Any industry for that matter always attracts highly skilled labour by better payment which in turn depends upon the profitability of the firm or industry. Therefore, achieving assured profitability is the key to attract many investors and also skilled workforce. Factor remuneration in FPI in terms of worker

wage and profit rate is compared for all the manufacturing industry for triennium ending (TE) 2017-18 and is presented in Figure 5. On an average, a worker in the FPI earned low wage, i.e., Rs.1.17 lakh per year in comparison with other all industry average (Rs.1.49 lakh per year). Though there is not much difference in the debt rate, slightly high rate of interest is paid by the FPI is noticed in the year TE 2017-18. It is noteworthy to mention here less profit rate in FPI (12.14 per cent) *vis-à-vis* with all industry (19.01 per cent) coupled with low wage rate may not in attract skilled young workers. Skill-orientation programmes for the rural youths with certification may be encouraged and deliberated as a yardstick, so that surplus workforce can be efficiently absorbed in FPI. Also, efforts should be made to improve the profitability, so that food industry can attract investment and skilled workforce, which may be a win-win situation to agriculture and food industry in the country.



Source: Authors calculations based on ASI data.

Figure 5. Factor Remuneration in FPI vis-à-vis All Industries, TE 2017-18

3. 2. *Financial Performance of the FPI*

Financial performance of the FPI using some of the important liquidity parameters is presented in Table 5. Computed current asset ratio for the FPI and its sub-sectors indicated (more than one) that on an average, firm in the industry will be able to pay its current liabilities within a year. However, in the recent period, the financial performance of the sugar industry is not so promising with the value of the current ratio is less than one (0.95). Additionally, an alternative more reliable measure of short-term liquidity is compared in terms of quick-acid-ratio. It indicated that FPI in general and sub-sectors (except processed fruits and vegetable) in particular turn to be weak (with the ratio value less than one) in liquidating its assets, which is a cause of concern, as it may discourage investors. The receivable and

payable days measure the average number of days that a company takes to collect revenue after a sale has been made and how long it takes a company to pay its invoices to suppliers, respectively. Lesser the days better will be the financial health and less than 90 days is an acceptable benchmark. FPI's performance found to better with 39 receivable days and 19 payable days, but sugar industry suffers due to the delay in payment to the supplier which is also in line with a low value of current ratio and quick-acid ratio. How best the firm will manage its inventory and how fast it converts inputs into cash flow is captured through inventory days and cash conversion cycle. Over the period, the length of these two indicators has extended between 2000 to 2018, particularly for grain mill and starch industries, and sugar industry. These ratios indicate that the financial performance of the FPI is not sound enough to attract investors.

TABLE 5. PERFORMANCE OF LIQUIDITY ASPECTS IN THE FPI

Year/NIC	FPI	Fish products	Processed fruits and veg.	Oils and fats	Dairy products	Grain mill and starch products	Sugar	Animal feed
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Current ratio							
TE 2000-01	1.3	1.59	1.47	1.38	1.35	1.32	1.11	1.54
TE 2015-16	1.26	1.4	2.11	1.37	1.45	1.52	0.95	1.4
	Acid test ratio							
TE 2000-01	0.6	0.96	0.66	0.74	0.83	0.65	0.19	0.89
TE 2015-16	0.62	0.9	1.55	0.88	0.95	0.59	0.25	0.84
	Working capital to annual sales							
TE 2000-01	0.96	4.88	5.67	3.15	1.89	0.42	0.87	5.23
TE 2015-16	9.8	8.99	49.31	11.07	8.8	19.16	-4.66	8.15
	Receivable days							
TE 2000-01	8.44	20.3	3.24	15.44	20.48	9	4.17	16.09
TE 2015-16	39.4	37.86	153.54	51.04	27.95	48.72	25.17	31.51
	Payable days							
TE 2000-01	4.81	7.12	0.05	17.1	17.17	14.03	31.22	8.98
TE 2015-16	19.41	25.98	53.19	56.62	30.77	36.82	119.95	20.65
	Inventory days							
TE 2000-01	45.15	17.79	32.06	19.68	15.58	34.74	107.37	20.57
TE 2015-16	87.94	38.64	94.34	54.21	34.4	124.48	249.16	32.96
	Cash conversion cycle							
TE 2010-11	113.44	66.92	134.03	39.5	30.42	156.83	159.5	37.15
TE 2015-16	107.92	50.52	194.7	48.63	31.58	136.38	154.38	34.67

Source: Authors calculations based on ASI data.

3.4 *Employment Function in the FPI*

The results of from estimated equation (1) are presented in Table 6. In column 2, the results corresponding to the FPI shows, a significant and positive coefficient of output (0.270) indicating that an increase in output will increase the employment as expected. The coefficient corresponds to the real wage rate found to be -0.054, indicating a negative relationship between employment and the wage rate, however, the coefficient is not significant. But the negative and significant coefficient in meat, fruits and vegetables, grain mill and animal feed industry could be used to draw a

general conclusion of negative impact of increased real wage on employment. The significant and positive coefficient value of the lag worker, also lies between '0' and '1', indicating a significant effect of lag in the adjustment of actual employment to its desired level. Of positive and significant coefficient of time dummy indicated a positive impact of liberalisation on employment generation. Thus short-run elasticity of employment for output is 0.270 and the long-run elasticity is 0.283. Similarly, the short- run elasticity of employment concerning the real wage rate is 0.054 and that of the long-run it is 0.056. It is noteworthy to mention here is that since the reduction in the employment due to rising real wages is not higher than the magnitude of employment generated due to higher output both in the short and long-run. Therefore, these findings reiterate the potential of FPI in generating employment along with rising capital investment. High-value commodities such as meat, fish, fruits and vegetables and feed industry can be targeted to improve the output level which has more potential to generate employment than the grain and sugar industry. Being a large contributor to the employment, grain industry can be expanded to nutri-rich cereals, which are in demand for their high nutritional value, thereby FPI will certainly absorb surplus labour in the country.

TABLE 6. EMPLOYMENT FUNCTION ANALYSIS (DEPENDENT VARIABLE = WORKERS NO.)

(1)	FPI (2)	Meat (3)	Fish (4)	Fruits-Veg. (5)	Dairy (6)	Grain mill (7)	Sugar (8)	Animal feed (9)
Constant	0.039*	-0.033	0.013	0.006	0.017	0.006	0.086***	0.007
	(0.019)	(0.0421)	(0.016)	(0.004)	(0.055)	(0.007)	(0.027)	(0.002)
Gross value	0.270*	0.797***	0.817***	0.523***	0.317***	0.434**	0.454***	0.767***
added	(0.155)	(0.194)	(0.124)	(0.125)	(0.097)	(0.168)	(0.139)	(0.103)
	[0.283]	[0.795]	[0.804]	[0.488]	[0.334]	[0.442]	[0.440]	[0.800]
Real wage	-0.054	-0.247*	-0.052	-0.412***	-0.208	-0.460***	0.079	-0.172*
Rate	(0.067)	(0.136)	(0.004)	(0.127)	(0.145)	(0.137)	(0.057)	(0.096)
	[-0.056]	[-0.247]	[-0.051]	[-0.385]	[-0.219]	[-0.469]	[0.077]	[-0.179]
Lag workers	0.034**	0.091**	0.015	0.071**	0.049**	0.018**	0.031**	0.040**
	(0.083)	(0.065)	(0.009)	(0.054)	(0.043)	(0.005)	(0.018)	(0.029)
Time dummy	0.043**	0.066	-0.001	0.056	0.016	-0.007	0.067**	-0.007
	(0.020)	(0.050)	(0.031)	(0.040)	(0.025)	(0.028)	(0.028)	(0.033)
Observations	36	36	36	36	36	36	36	36
R-squared	0.49	0.50	0.72	0.67	0.52	0.46	0.33	0.75

Notes: Standard errors in parentheses; figures in square brackets are log run employment elasticity with respect output and real wage rate; ***. **, * indicate significance at 1, 5 and 10 per cent level, respectively.

IV

CONCLUSIONS

This study has analysed the role of capital intensity and financial performance of the Indian FPI. It has also examined the nature and potential to generate employment in the FPI as a whole and its sub-sectors level. The results showed rising capital intensity across the manufacturing sector in general and FPI in particular. In fact, as a labour-intensive industry, FPI took lead in the growth of capital intensity with almost 15 times higher during the period 1980-2018. Despite increased capital investment,

financial performance of the FPI in certain business parameters was found to be low, which may discourage the investors. The employment pattern in the industry witnessed contractualisation of the labour force with rising demand for managerial and supervisory workers. This reorientation in the pattern of employment is also reflected in the wage distribution, where the workers share reduced to 52.55 per cent from 60.80 per cent with a rise in the share of supervisory and managerial workers from 16.54 per cent to 30.29 per cent in the total wage bill. Gaining importance of skill complementing capital investment is the need of the hour to focus more on skill-oriented programmes and schemes. The estimated employment function reiterates the increasing potential of FPI in generating employment along with rising capital investment. Efforts are therefore needed to focus on the high-value commodities such as meat, fish, fruits, vegetables and feed industry, to improve the output level which has more potential to generate value and employment. The grain industry being a biggest provider of jobs can be expanded to the nutri-rich cereals to absorb the surplus labour in the country.

NOTES

1) Industries producing beverages, paper and paper products, coke and refined petroleum, chemical, pharmaceuticals, rubber, plastic, metal, electronic, motor vehicle and transport equipment were considered as capital intensive and rest were grouped into labour-intensive manufacturing sector. Similarly, in the FPI, grain mill industry, bakery products and prepared meals identified as labour intensive and remaining as capital intensive.

2) For detailed analysis and variables considered please see (Sanyal and Panigrahi, 2016)

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ANNEXURE 1
CLASSIFICATION OF MICRO, SMALL AND MEDIUM ENTERPRISES (MSME)
IN THE MANUFACTURING SECTOR

Enterprises	Investment	Turnover
(1)	(2)	(3)
Micro enterprises	Up to 1 crore	Up to 5 crore
Small enterprises	1- 10 crore	5 - 50 crore
Medium enterprises	10 - 50 crore	50 - 250 crore

Source: msme.gov.in.