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# Employment Generation in India's Food Processing Industry: The Role of FDI Inflows and Registered Units

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## ABSTRACT

Foreign Direct Investment has a critical role in the growth of the Indian economy. The role of foreign direct investment is important in the food processing sector. There has been a meaningful increase in the gross value addition and foreign direct investment (FDI) in food processing sector. The Government of India has implemented several innovative schemes such as the National Programme for Dairy Development, the Credit Guarantee Scheme for Micro and Small Enterprises, and several other schemes. Review of the literature reveals that a few studies have been conducted to examine the impact of foreign direct investment inflow and number of registered units on generation of employment in the food processing sector in India. The present study has used multiple linear regression analysis to examine the impact of foreign direct investment inflow and number of registered units on generation of employment in the food processing sector in India. The study had shown a positive relationship between the number of registered enterprises and job creation. Further, as for foreign direct investment, it has not been established that it has any important impact on job creation in India. The research paper seeks to analyse the impact of the number of registered enterprises on job creation along with foreign direct investment in the food processing sector in India. It also examined the trends in the number and nature of registered food processing units, and trends in foreign direct investment (FDI) in the food processing sector in India.

**ABRREVIATIONS**

FPI - Food Processing Industry

FDI - Foreign Direct Investment

**Introduction**

Foreign direct investment (FDI) in food processing has seen an eightfold growth in India from 2011 to 2022. Food processing firms in India recorded a 9.97% compound annual growth rate (CAGR) between FY 2014-15 and FY 2020-21. The food processing industry contributes 8% to India's GDP (Kumar & Sohanlal, 2022). A positive correlation has been found between food security and sectoral foreign direct investment (Mihalache-O'Keef & Li, 2011). The absorptive capabilities of different sectors for technology and foreign direct investment, and their ability to integrate with the global economy differ (Hirschman, 1958). There is a positive effect of foreign direct investment (FDI) on exports and job creation in the manufacturing sector due to spillover effects (Aitken, Hanson and Harrison, 1997). FDI has a positive effect on economic growth in the manufacturing sector because of spillover effects. However this does not hold for the agricultural and mining sector which shows a negative effect. A similar indeterminate influence is also observed in the service sector (Alfaro, 2003). Modern food processing began as a means for military applications during the 19th and 20th centuries. In 1809, Nicolas Appert, a Frenchman, invented the first method of hermetically sealing food in bottles to preserve foods for the French army. Pasteurisation was discovered by Louis Pasteur in 1864 and allowed the quality of preserved products to be improved, resulting in the preservation of products such as beer, wine and milk (Kumar & Sohanlal, 2022).

FDI inflow leads to economic growth (Karahan & Colak, 2022).

The key determinants of FDI are trade openness, economic development and local investment (Romdhane et al, 2022). Local investment drives development but has a variable effect ( Lean & Tan, 2011). It is a major contributor of capital in the economic development process. Foreign affiliates are playing an important role in the process of technology transfer by the food safety

standards (Tade et al. 2009). The FPI is also facing underfunding in India (EPW Editorial 2003). According to the "Annual Survey of Industries", the number of people employed in the registered food processing industry was 1777000 in the 2011-12 financial year.

## LITERATURE REVIEW

The result signifies that FDI has a long-run relationship with domestic investment and both are co-integrated in the long run. The results from DOLS also show that foreign direct investment has a positive, moderate, and statistically important effect on domestic investment. Using the Engle-Granger cointegration test it was shown that there is a long-run relationship between FDI in FPI and the GDP of India. The sector has been growing since 2000, due to a focus on policy and investment by domestic and foreign sources. Given the facts that food processing contributes the most to the potential new employment in the organised industrial sector and that Thomas & Tantri (2023) find the elasticity of employment declining over time, the food processing sector is critical in the Indian economy and industrial framework. These industries maintain food security, and generate rural and urban employment, contribute to gross domestic product and earn foreign exchange through exports. The greatest share of foreign direct investment in the manufacturing sector was seen in the 2018-19 and 2019-20 fiscal years. Related to the food processing industry, major investments took place before the Covid-19 pandemic, and post-pandemic, the decline was noted in the said investment (Ebenezer & Savitha, 2023). The relationship between GDP and the number of food units and between FDI and the number of food units in India is positive. The relationship between ease of doing business and the number of food units in India is negative. Digital lending has affected the number of food outlets in India Dinker & Gangwar (2023). The GVA of the two sectors and the FDI inflows maintained a long-run equilibrium relationship, but it was not so in the short run. However, the extent of such a crowd-out effect of foreign direct investment (FDI) on domestic investment in the manufacturing sector, was short-run only in developed countries. The crowd-multipliers working through the tertiary sector appeared to be weak in explaining the causes of attracting FDI compared to the

secondary sector in Makur & Jana ( 2022). For the food processing sector and the three development groups, crowd-out effects existed. In the long-run, with Djokoto (2022), the linear trends of FDI in agriculture and the food processing sector considerably increased, and the cyclical and cycle trends were highly meaningful. The linear trends in outward FDI in tea and coffee and agricultural machinery were insignificant according to Bhowmik ( 2022). However, the cyclical trends and cycle trends were meaningful according to the H.P. filter model. The "food processing industries" have a positive and meaningful coefficient on the economy of India Saini & Sharma ( 2022). However, India's food processing industry has lagged behind other developing countries in performance. The Delphi analysis and the analytic hierarchy process (AHP) were performed, identifying 18 barriers in the food processing sector. Of these eighteen, eight were farm level, seven were distribution level, and three were of consumer level (Singh et al., 2022). We further used descriptive statistics to analyse the effects of "food processing sector" on GVA. The gross value added calculations have been applied for the last six years since 2015 due to a large number of agribusinesses in the sector. This has encouraged many foreign investors in the food processing industry. The exports have also fluctuated the last five years, remaining above the average during this period (as shown by Nilofar et al., 2021). It was also found that while the FDI inflow had no positive growth effect on agricultural output, it had a positive effect on manufacturing output for a few years (as discussed by Jana et al., 2019). Further, Santangelo (2018) indicates that the acquisition of land by investors from developed countries directly impinges upon food security. They also reported that foreign direct investment (FDI) had an effect of improving TFP, while the level of TFP had a negative short run impact (Fujimori and Sato 2015). FDI in agriculture improved food security, but FDI in the secondary and tertiary sectors increased food insecurity (Slimane et al., 2015). Jongwanich (2009) states that the food security standards of developed countries can limit the export of processed food from developing countries. It was reported that the food processing sector in Thailand is lagging behind other developing countries (Jongwanich, 2009). The Delphi method and the Analytic Hierarchy Process (AHP) technique were applied and 18 barriers were identified within this

industry. Eighteen under the three tiers existed: eight at the farm level, seven at the distribution level, and three at the consumer level.

## OBJECTIVES OF STUDY

- "Analyze the trend and growth of registered food processing units in India over time.
- Examine the pattern of foreign direct investment inflows into food processing industry.
- To study impact of Number of registered units and FDI inflow in food processing industry on employment generation in food processing industry in India."

## RESEARCH METHODOLOGY

The study deals with secondary data, which was taken from the MOFPI (Ministry of Food Processing Industry ).

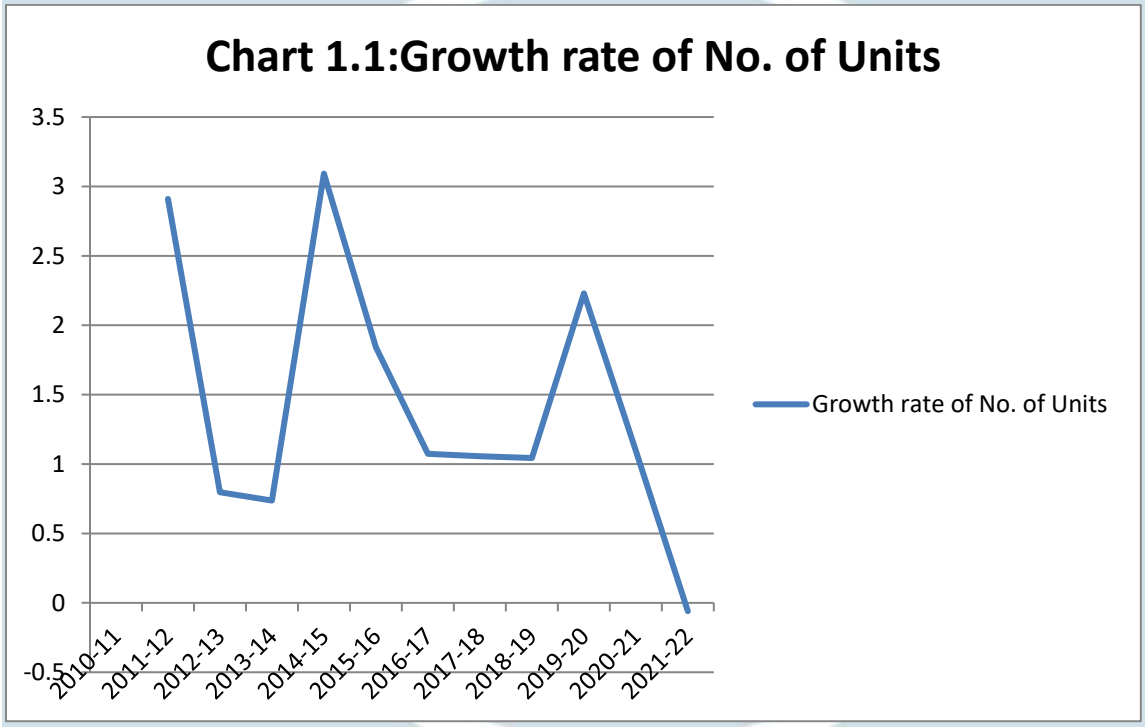
## RESULT AND DISCUSSION

**Table 1.1: Growth Rate of Number of Units**

| Year | Employment (in lakh) | FDI (in crore) | Number of Units | Growth rate of No. of Units |
|---|---|---|---|---|
| 2010-11 | 16.61 | 858.03 | 35838 | _ |
| 2011-12 | 17.76 | 826.16 | 36881 | 2.91 |
| 2012-13 | 16.89 | 2193.65 | 37175 | 0.79 |
| 2013-14 | 17.41 | 25106.73 | 37449 | 0.74 |
| 2014-15 | 17.74 | 3164.72 | 38607 | 3.09 |
| 2015-16 | 17.65 | 3312 | 39318 | 1.84 |
| 2016-17 | 18.54 | 4865.85 | 39740 | 1.07 |

| | | | | |
|---|---|---|---|---|
| 2017-18 | 19.33 | 5835.62 | 40160 | 1.06 |
| 2018-19 | 20.05 | 4430.44 | 40579 | 1.04 |
| 2019-20 | 20.33 | 6414.67 | 41484 | 2.23 |
| 2020-21 | 20.36 | 2934.12 | 41938 | 1.09 |
| 2021-22 | 20.68 | 5290.27 | 41913 | -0.06 |

**Source: Ministry of Food Processing Industry (MOFPI)**



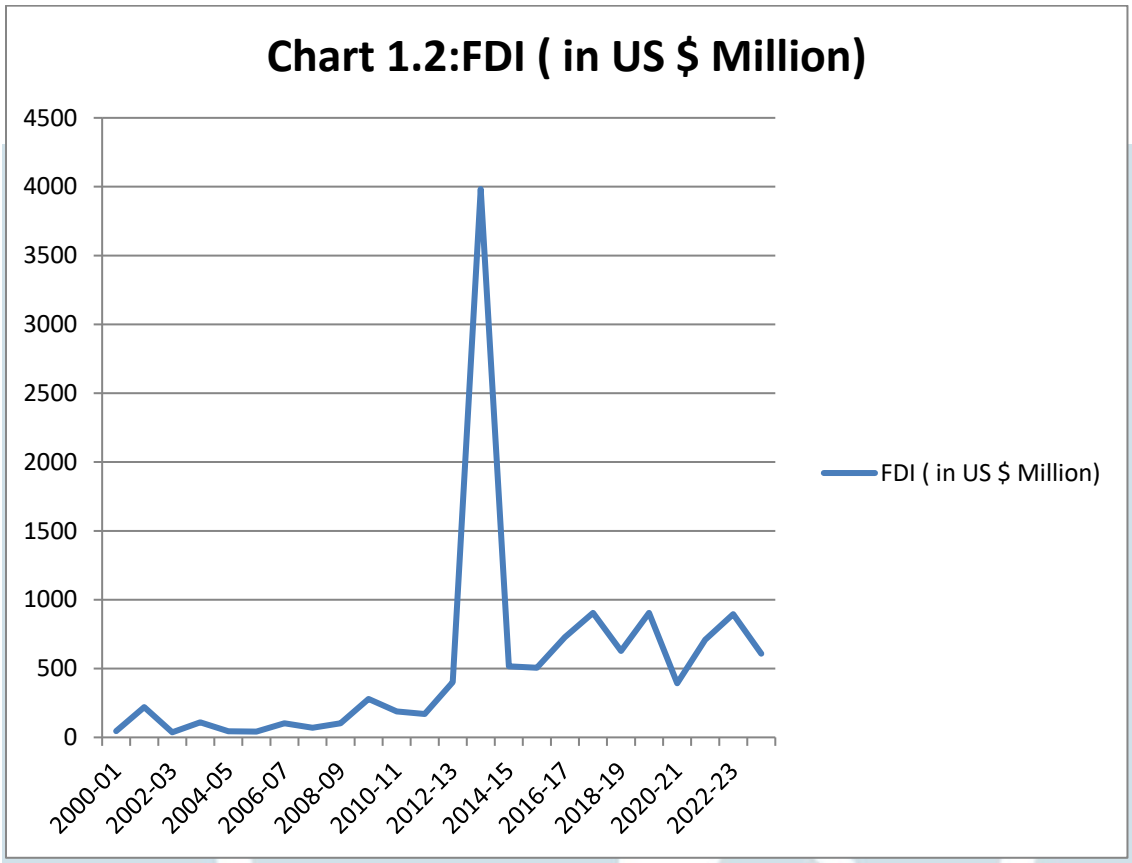

**Source: Self Calculated**

The following is a graph of the rate of growth of the number of units in the registered food processing industry. The years are shown on the X-axis while the Y-axis shows the percentage of growth of the number of units in the registered food processing industry. The highest growth rate was in 2014-15, while the lowest growth rate coincided with the period of 2021-22.

**Table 1.2: FDI inflow has taken from 2000-01 to 2023-24.**

| Year | FDI( in US $ Million) | Year | FDI (in US $ Million) |
|---|---|---|---|
| 2000-01 | 45.75 | 2012-13 | 401.46 |
| 2001-02 | 219.39 | 2013-14 | 3982.89 |
| 2002-03 | 36.88 | 2014-15 | 515.86 |
| 2003-04 | 109.22 | 2015-16 | 505.88 |
| 2004-05 | 43.98 | 2016-17 | 727.22 |
| 2005-06 | 41.74 | 2017-18 | 904.9 |
| 2006-07 | 102 | 2018-19 | 628.24 |
| 2007-08 | 70.17 | 2019-20 | 904.7 |
| 2008-09 | 102.71 | 2020-21 | 393.41 |
| 2009-10 | 278.89 | 2021-22 | 709.72 |
| 2010-11 | 188.67 | 2022-23 | 895.34 |
| 2011-12 | 170.21 | 2023-24 | 608.31 |

**Source: Department for Promotion of Industry and International Trade (DPIIT)**




**Source: Department for Promotion of Industry and International Trade (DPIIT)**

The peak FDI during 2013-14 was US $ 3982.89 million. Favourable government policies, increasing consumer demands and easy availability of raw materials are some of the reasons for the FDI that has come to this sector.

Lowest FDI 2002-03 was US $ 36.88 Million. This could be due to the world economy being weak and FDI rules in India being complex.

However, from the graph it is clear that the inflow of FDI was low for major part of the years which indicates poor performance of Indian economy and infrastructure of Indian economy.

## MODEL

In this chapter an attempt has been made to study the impact of number of units registered and

amount of foreign direct investment (FDI) flow into the food processing industry on the employment generation in India. Multiple Linear Regression is used to quantify the effect of two independent variables over one dependent variable. To investigate the impact of FDI inflow and registered units on employment in the food processing industry in India, time series data for employment, registered units and FDI inflow in the food processing industry for the financial years 2010-11 to 2021-22 are used and the effect of FDI inflow and registered units is examined using a multiple linear regression model.

The 2010-11 to 2021-22 data is collected, and the first step involves the hypothesis: The null hypothesis is defined. The alternative hypothesis is also defined.

H0: The quantity of registered units and the inflow of foreign direct investment in the food processing sector do not influence job creation within India's food processing industry.

H1 The quantity of registered units and the influx of foreign direct investment in the food processing sector significantly influence job creation within India's food processing industry.

**Table 1.3: Data on Employment, FDI inflow, Number of units**

| Year | Employment (in lakh) | FDI (in crore) | Number of Units |
|---|---|---|---|
| 2010-11 | 16.61 | 858.03 | 35838 |
| 2011-12 | 17.76 | 826.16 | 36881 |
| 2012-13 | 16.89 | 2193.65 | 37175 |
| 2013-14 | 17.41 | 25106.73 | 37449 |
| 2014-15 | 17.74 | 3164.72 | 38607 |
| 2015-16 | 17.65 | 3312 | 39318 |
| 2016-17 | 18.54 | 4865.85 | 39740 |
| 2017-18 | 19.33 | 5835.62 | 40160 |

| | | | |
|---|---|---|---|
| 2018-19 | 20.05 | 4430.44 | 40579 |
| 2019-20 | 20.33 | 6414.67 | 41484 |
| 2020-21 | 20.36 | 2934.12 | 41938 |
| 2021-22 | 20.68 | 5290.27 | 41913 |

**Source: Ministry of Food Processing Industry (MOFPI)**

The table gives comparison of the above three variables Employment, No of registered units and FDI inflow. Highest employment was in 2021-22 which was 20.68 lakh. The greatest registered units, with maximum registered capital, was recorded in 2013-14 as 25106.73 crore and the maximum registered units 41938.

The Ordinary Least Squares (OLS) method is then used to estimate the parameters' values.

- - Examine the historical trend of food processing units registered over the years in India.
- - Analyse the trends of Foreign Direct Investment (FDI) in the food processing sector.
- - Examine the impact on jobs of the number of registered units.
- Analyse how FDI inflows create employment opportunities in the food processing industry.

$Yi=\beta0+\beta1number +\beta2\ fdi\ +ui$

$\hat{y_i}$ = -12.253 + 1.439 number – 0.006 fdi

SD (1.836) (0.176) (0.013)

t (-6.67)* (8.14)* (-0.60)

F = 37.99 * $R^2 = 0.894$

*= shows the p-significant value at the 5 per cent level.

The fit of the model is important, since the F-statistic is 37.99, which is meaningful at the 5% level. This shows that the independent variables together had an important effect on job creation in the food processing sector. The model explains 89.4% of the variation in employment, with

an $R^2$ of 0.894.

The empirical results indicate a statistically important positive impact of registered units on employment. Thus, a one-unit increase in registered units is expected to increase employment by 1.439 (t = 8.14) units, indicating that industrial growth and registered enterprises have a positive effect on employment generation.

However, the coefficient on FDI is negative (-0.006) and not statistically important (t = -0.60), suggesting that the current level of FDI inflows does not appear to have any meaningful effect on job creation. This could be the result of FDI often being directed towards technology- or capital-intensive sectors that may not directly create employment.

The intercept (−12.253; t = −6.67) has no practical interpretation since employment can only take positive values, but it represents the adjustment made to this model.

To summarise, the results suggest that domestic industrial growth translates into increased employment in the food processing sector, whereas the share of FDI has a limited and statistically insignificant effect.

Employment generation can be largely explained by Number of registered units and FDI inflows (89.4% of its variance is explained).

Here are the results that the researcher got applying the multiple linear regression technique.

Thus, we reject the null hypothesis that the number of registered units is not related to registered employment.

A 1 percent increase in Number of units (fpi) is associated with a 0.0668 percent increase in employment. The model has an R2 of 0.89, and 89 percent of the variation in employment is explained by Number of registered units. There is a positive relationship between the Number of registered units and employment in registered units.

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