

# Chapter -1

## Introduction

### 1.1 Introduction

The share of agriculture in the Gross Domestic Production (GDP) of the Indian economy is around 14 % however, the population of its employs about 2/3rd. India has about 161 million hectares of arable land of which 55 million is irrigated.<sup>1</sup> Considering these factors, it is clear that there is immense potential for the agriculture sector and food security. India has made many successes on agricultural and economic front viz. green revolution, white revolution, blue revolution & yellow revolution but with the changing of times, we are facing new challenges in the form of agricultural development, disguised employment in agriculture sector, unemployment especially in rural area, wastage of food products, food insecurity & food prices and inclusive growth. India ranks first in the production of milk, pulses and tea and second in the production of fruits & vegetables, rice, wheat and third position in major food crops in the world<sup>2</sup>. India's production base is strong but at the same time wastage of agricultural production is massive. In India 35% of F&V of total production are being wasted due to traditional supply chain. Which is more than the total consumption of U.K. and the amount of wastage is Rs 44,000 core, which is more than the budgetary allocation for the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) of Rs 40,000 crore for the fiscal year 2011-12<sup>3</sup>. (See in Table. 4.1) Post harvest losses in India may cross Rs. 2.50 lac crore by 2013-14.<sup>4</sup> The latest example farmers in the West Bengal, in April 2013 are, venting their anger and frustration by

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<sup>1</sup> Economics survey 2013

<sup>2</sup> Agricultural statistic at Glance (2013)

<sup>3</sup> The Economics Time (Nov 11, 2011).

<sup>4</sup> ASSOCHAM, August 13, 2013.

throwing their year's yield of tomatoes on the roads. Having spent nearly 8 rupees (\$0.15) for producing one kg of tomato and failing to get even 1 rupee (\$0.02) in the markets most of the farmers resort for selling their product at a loss. Ironically, while farmers are incurring huge losses, end consumers are shelling out 12-15 rupees for a kg of tomatoes. (Story in Business Line)<sup>5</sup> The wastage of food-grain is 15 % of the total production of food-grain which is more than the total production of Australia, resulting in a huge gap between gross production and the net availability of agricultural food products to the consumers. The Government of India has been paid enough attention at pre-harvest stage for boosting up at the level of production and productivity by many techniques like crop rotation, soil conservation, pest control, fertilizers, irrigation etc. but, post-harvest management issues have been addressed inefficiently. <sup>6</sup> That's why may be the level of food processing in India is extremely very low (See in Table 4.2) at around 6% compared to that of 60 to 70% in developed countries and over 30% even in most other Asian and latin American developing countries.<sup>7</sup> There is clearly high wastage and very low value addition in our country, with corresponding loss of business opportunities as well as losses in farm income. The profits on agricultural commodities have greatly diminished. Since nineties, the cost of agricultural inputs has increased faster than the market price of the outputs. As a result, farmers are about 15-20 per cent worse off, even after taking into account the gains in productivity<sup>8</sup>.

With 1.6 billion population by the end of 2040, we would need around 400 mt of food grains for food self sufficiency. In order to meeting the target of 400 mt there should be an increase in agricultural production, productivity, but there are number of challenges to achieve

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<sup>5</sup> <http://www.thehindubusinessline.com>

<sup>6</sup> Dr Hajiza Ahan ©APO 2006, ISBN: 92-833-7051-1.

<sup>7</sup> Annual Report Ministry (2012-13) of Food Processing Industry

<sup>8</sup> Agriculture industry interface: Value Added Farm Products, Policy Paper-16, (2002).

this target in India, because, in some places where agricultural land has got saturated point and agricultural land is shrinking day by day due to multiple use of land. The growth of agriculture is also declining since last two decades marginally. The dependency of population on the agriculture is increasing; per-capita net availability per day of food-grain since last decade has also declined<sup>9</sup>; resulting in 42 % children under malnutrition, 50 % women anemic and around 22 % population Below Poverty Line (BPL) and 836 million people living under less than Rs 20 per day in India.<sup>10</sup>

The problem of agricultural development needs to be tackled from two different angles, first, to increase productivity of agriculture and delivery system and second, to increase the farmer's earning through efficient, effective value addition and processing of agricultural commodities. The development of Food Processing Industries (FPI) is an integral part of agricultural development. Agricultural development is a continuous and dynamic process involving constant changes in the structure and behavior of the agriculture. If we develop FPI in the India, automatically, Backward and Forward Linkages (BFL) of these industries will be developed. The linkages between the two sectors can be categorized in two groups based on the direction of interdependence. One of the Backward Linkages (BL) which identifies how, a sector depends on others for their inputs and other is Forward Linkages (FL), which identifies how a sector distributes its outputs to the remaining economy. More importantly, these two linkages can indicate a sectors economic pull and push effects, because the direction and level of each sector to encourage others and then reflect the role of this sector accordingly. If the BL of FPI is increasing then the dependency of the FPI on the Agriculture and Allied Sector (AAS) will be increased for inputs/raw material, which is helpful for agricultural development because these

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<sup>9</sup> Agricultural Statistics At a Glance 2011.

<sup>10</sup> United Nation Standard Committee on Nutrition (2012).

linkages will minimize level of wastage of agricultural products, increased level of food processing and which also enhances self-life and value addition even if agricultural produce is merely cleaned, sorted, and packaged. Further processing into high value-added products will increase revenue for the producer. The study has examined the interdependency and BFL between AAS, and FPI. The finding of this research is that interdependency of FPI on agriculture is high in comparison to other sectors of the Indian economy in the present study. FPI has used inputs (0.3602) from the agricultural sector. This shows that FPI rely heavily on the AAS for their raw materials. FPI is having the highest BL whose coefficient is 1.2947 in comparison to other sectors. It means that if the outputs and the growth rate of FPI are increasing then the development of agricultural sector will be increased. The study has also examined the long-run relationship between FPI and AAS with the help of Johansen Co-integration tests. The co integration results revealed that the residual of AAS and FPI are stationary. It means, there is a long run relationship exists between these two variables. Since the result of Jonson co integration confirm the existence of long run relationship between two variables.

FPI is more employment intensive industry, (See in Figure 4.1) in comparison to all the other industries, food products generated the highest employment (12.2) followed by Textiles (11.5), Basic Metals (8%).<sup>11</sup> It provides positive consequences on the social sector like strengthening food security, agricultural development as well as employment, rural development, strengthening-women empowerment etc. According to our President Parnban Mukherjee, (when he was the Finance Ministry of India) “After the Green and the white Revolution, there is need for translating into reality another revolution, that is the revolution in the FPI. There lies the

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<sup>11</sup> Annual Survey of Industry, 2010,

answer to our major problems of unemployment, rural poverty and deprivation.”<sup>12</sup> India needs to sustain an average agriculture growth rate of 4 to 4.5 % in order to reduce food insecurity and poverty. At this growth rate, agriculture development could more speedily diversify into horticulture, fishery, dairying animal husbandry and other area<sup>13</sup>. In a developing country like India, where growth with equity is a most important strategy force, the optimum development of the FPI will contribute significantly in tackling several development concerns such as agricultural development, disguised employment agriculture sector, poverty in rural area, wastage of food products, food insecurity and food inflation.<sup>14</sup> By serving a link between agriculture and FPI, this sector has the potential to be most important driver in India’s growth in the coming year.

## **1.2 Statement of the Problems**

One of the most important challenges facing by the country is providing remunerative prices to the farmer for their produce without incurring the additional burden of subsidies. This challenge could be addressed if processing level and value addition of the row produce can be enhanced to meet the growing demand for processed foods<sup>15</sup>. FPI has an important role to play in linking the Indian agriculture to consumers in the domestic and the international markets.

The linkage can be understood in two ways; first, the FPI leads the maximum utilization of agricultural products and second is increase economic activities in the economy through BFL between FPI and agricultural sector. In the most of the African countries agriculture was considered as the first stage of development while post-harvest management issues are neglected

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<sup>12</sup> Food 360, VOL 1, Issue 1, May-July, 2009.

<sup>13</sup> The Vision ( 2020), Document of the National Planning Commission, Govt. of India.

<sup>14</sup> Prof. D. C Vashisht (2013).

<sup>15</sup> Vision Strategy and Action Plan for Food Processing Industry, Vol. 1, (2005), Ministry of Food Processing Industry, Govt. of India.

on the other hand<sup>16</sup>. The same thing happened in India, agriculture is the backbone of Indian economy for socio-economic development since independence, and however, the level food processing is very low in comparison to other countries. Due to lack of proper management of the produce post-harvest losses have been high. This results in instability in prices, loss in farmer's incomes and challenge for food security. Agriculture and food processing cannot exist without each other and hope that food processing will make our agriculture economically viable. FPI promotes vital linkages between two main pillars of the Indian economy i.e. industry and agriculture<sup>17</sup>. It provides positive consequences on the social sector like strengthening food security, agricultural development as well as employment and rural development etc. If the development of FPI market is moving upward, it will lead to an increase in agricultural development and economic activity as well as inclusive economic growth. In such a position, it needs to investigate role of FPI in agricultural development of India. In other words, it can be said that what linkages between agriculture and FPI are prevailing. Based on the above consideration, the present study has framed some objectives.

### **1.3 Objectives of the Study**

1. To discuss the relevance of FPI in the present scenario such as employment, post harvest management, food security and women empowerment in India.
2. To examine interdependency and BFL between FPI & AAS.
3. To examine income effect, direct income effect as well as direct & indirect income effect on FPI and AAS.
4. To carryout unit root tests to see whether the AAS and FPI are stationary or not.

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<sup>16</sup> Omo Ohiokpehai, (2003), Food Processing and nutrition: A Vital Link in Agricultural Development, Pakistan Journal of Nutrition 2(3): 204-207, 2003.

<sup>17</sup> The Vision ( 2020), Document of the National Planning Commission, Govt. of India.

5. To perform co-integration tests to know whether the AAS and FPI are co-integrating and what is the number of co-integrating vectors.
6. To estimate the speed of adjustment to equilibrium relationships and to estimate long-run and short-run relationship between AAS and FPI by estimating ECM model.

#### **1.4 Significance and Limitation of the study**

Interdependency, BFL and long run relationship analysis may be quite useful to evaluate the effects of agricultural development strategies which are aimed to strengthen the supply chain process between FPI and AAS. The linkages also provide a way to the policy makers and allocate the resources for getting better outcome, as the Input Output (I-O) Table gives the supply demand behavior of economic agents at macro level. Having the results about the agriculture sector, the policies can be helpful towards this sector for higher growth of economy. Limitation of the study is that, we include only organization sector of the FPI because initially the focus of the study is on secondary data sources. So we are not including unorganized sector or small scale industries which provide a major contribution around 75 % in the FPI. One another limitation of I-O Tables is that these tables occupy voluminous data collection; they are generally not available on an annual basis.

#### **1.5 Organization of the Study**

In addition to this chapter on introduction, the thesis contains six more chapters:

**Chapter: 2** This chapter deal with the Profile of FPI and agriculture of India.

**Chapter: 3** This chapter contains a brief review of literature relating to the theme of the present research work.

**Chapter: 4** This chapter presents relevance of FPI at present era.

**Chapter: 5** This chapter has examined interdependency, BFLs between FPI and AAS. This chapter also examines income effect, direct income effect as well as direct & indirect income effect for FPI and AAS.

**Chapter: 6** This chapter has examined the long term relationship between the agricultural sector and FPI of India with the help of Co-integration test, brief description of data and econometric tools such as unit root tests, Johansen co-integration tests, Error correction model to investigate the impact of FPI on agriculture development of India.

**Chapter: 7** This chapter contains the conclusion of the present study.

Finally, the study presents the Bibliography and relevant appendix of the thesis respectively.

This chapter presents the linkages FPI and AAS, data description and methodology for computation of the linkages