



Research Article

ANALYSIS OF TRENDS AND IMPACT OF FOREIGN DIRECT INVESTMENTS ON INDIAN AGRICULTURE

DEEPA M.P.M.* AND P.S. SRIKANTHA MURTHY

Department of Agricultural Economics, University of Agricultural Sciences, GKVK, Bengaluru, 560 065, India

*Corresponding Author: Email - deepapalb7004@gmail.com

Received: February 25, 2019; Revised: March 11, 2019; Accepted: March 12, 2019; Published: March 15, 2019

Abstract: Dramatic changes observed over past thirty years in food production, distribution, marketing and consumption have significantly influenced by the changing investment patterns in agriculture sector. India is one of the world's fastest growing agriculture-based economies, emerged as a viable partner to the global industry for investments after globalization. FDI is needed to meet investment gaps and boost agricultural Sector. Present study analysed trends in FDI flows, Structural breaks using Bai-Perron test and regression analysis to know the impact of FDI on Indian agricultural GDP. Results revealed that India has net FDI flows of 22.60 percent. FDI inflows in agriculture and allied sector and food processing industry are growing at the rate of 16.1 and 16.56 percent respectively. Structural breaks were identified in 2002, 2009 and 2012. Regression analysis emphasis to boost investments in agriculture sector as food is the basic necessity.

Keywords: Agriculture, FDI, Globalization, Liberalization and Trade

Citation: Deepa M.P.M. and P.S. Srikantha Murthy (2019) Analysis of Trends and Impact of Foreign Direct Investments on Indian Agriculture. International Journal of Agriculture Sciences, ISSN: 0975-3710 & E-ISSN: 0975-9107, Volume 11, Issue 5, pp.- 7934-7937.

Copyright: Copyright©2019 Deepa M.P.M. and P.S. Srikantha Murthy. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

Academic Editor / Reviewer: Dr Nitin Tanwar

Introduction

Dramatic changes have been observed over the past thirty years in food production, distribution, marketing and consumption. All these processes have significantly influenced by the changing investment patterns in the agriculture and allied sectors. After several decades of under-investment in the agricultural sector in developing countries, the late 2000s has witnessed a surge in foreign direct investment (FDI) in primary agricultural production. It was because of hike in commodity prices in 2007-2008 and the realization that demand for finite natural resources continues to increase significantly in the next four decades. Foreign investment in agriculture is not completely a new trend but the traditional foreign investments aimed to provide better access to market or cheaper labour, whereas recent foreign investments aims to gain access to natural resources, in particular land and water. FDI tend to have relatively high employment-generating potential in labour-intensive sectors such as leather and leather products, textiles and readymade garments, light machine tools and new plants set up in small cities near to rural and suburban areas. It can provide access to new technology, cheaper production facilities, new markets and marketing channels, new products, skills and financing to the host country or the foreign firm which receives the investment. It also has a potential to provide a strong impetus to economic development. FAO estimates that additional investments of \$83 billion annually are needed in order to meet the food demand of developing countries particularly like India by 2050. Given the limitations of alternative sources of investment finance, FDI plays a complementary role in overall capital formation and in filling the gap between domestic savings and investment. It is a non-debt-creating source of additional external finances is expected to boost output, technology, skill levels, employment and linkages with other sectors and regions of the host economy [FAO report 2016 -17]. India is one of the world's fastest growing agriculture based economies with second largest labour force; it remained closed until early 1990's. After the globalization its share in the world trade increased tremendously and stood first with highest foreign exchange remittances and has become newly industrialized county, with this it has emerged as a viable partner to the global industry for investments.

FDI is also a major source of non-debt financial resource for the economic development of India. Robust business environment and supporting policy implementations by Indian government have ensured continuous flow of foreign capital to our country. Besides foreign companies' investments, Indian companies are also reaching overseas destinations to tap new markets and acquire technologies. While some of the investment has gone into Greenfield projects, a major portion of Indian overseas investment went into acquiring companies abroad. Significant changes have been made in the FDI policy regime in recent times by implementing 'Make in India' and 'Invest India' initiatives, to ensure that India remains an increasingly attractive investment destination [Deepak K A 2016].

Need for FDI in Indian agriculture

There has been decline in the public and private sector investments in India which resulted in contraction of Gross Fixed Capital Formation by 2.1 %. In order to meet these investment gaps and boost Agricultural Sector in terms of productivity and capital formation there is a need of FDI. It also undertakes the problems of poverty and hunger. Moreover, foreign capital with latest technology, research and employment generating capacity would be an added advantage for agricultural sector.

Objectives of the study

To analyse the trends of FDI inflows and outflows of India.

To analyse the FDI in Indian agriculture and allied sectors.

To account for the structural breaks in FDI and its impact on GDP of Indian agriculture.

Methodology

Data source and collection

The above objectives have been studied by using secondary data. It has been collected from various sources such as, published reports of Department of Industry Policy and Promotion, Reserve Bank of India, Hand book of statistics, some websites etc.

Analysis

The data has been analysed through tables and graphs this helps to know the trends and patterns of FDI inflows and outflows of India. Compounded annual growth rates are found out which gives growth over multiple time periods and provides growth rate. Bai - perron test has been done to know the structural breaks in FDI inflows. Regression analysis has done to analyse the impact of FDI on agricultural GDP. In order to see the functional relationship between the FDI inflows in Agriculture and allied sector and GDP of Agriculture and allied sector from period 1996 to 2015 a model was fit by taking some other variables also, which are listed below.

$$GDP_{agri} = a (FDI_{agri})^{b1} (GCF_{agri})^{b2} EXP_{agri}^{b3} (FER)^{b4}$$

GDP_{agri} = GDP of Agriculture and allied sectors

FDI_{agri} = FDI inflows in agriculture and allied sectors

GCF_{agri} = Gross Capital Formation in Agriculture

EXP_{agri} = Total Agricultural Exports

FER = Total fertilizer consumption in India

Results and discussion

India is a late comer in opening up her economy, it was unable to attract sufficient amount of FDI initially as compared to other developing countries. Of late the government has started providing transparent and investor friendly climate for making India a top destination for global FDI inflows. The highest FDI inflows are noticed in 2015-2016 to the tune of USD 55457 Million. Due to relaxations in the overseas investment policies FDI investments started gradually increasing from 2004. As a result of this, investment (Table 1) by India have increased significantly in 2007 and were highest in 2009 with investment of \$ 19,365 million abroad.

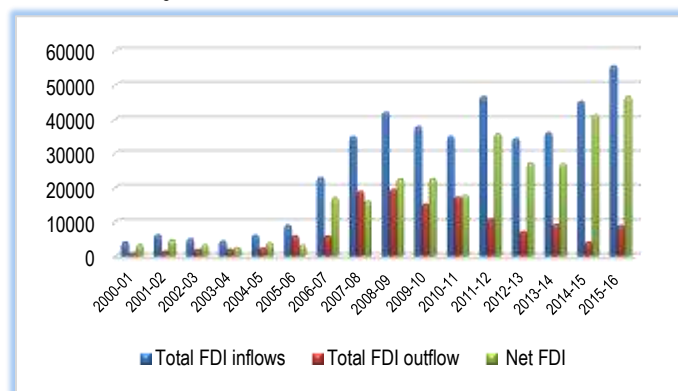


Fig-1 FDI inflows and outflows (2000-2016)

Table-1 Net FDI in India (2000-2016)(US Million \$)

Financial Year	Total FDI inflows	Total FDI outflow	Net FDI
2000-01	4029	759	3270
2001-02	6130	1391	4739
2002-03	5035	1819	3216
2003-04	4322	1934	2388
2004-05	6051	2274	3777
2005-06	8961	5867	3094
2006-07	22826	5867	16959
2007-08	34843	18835	16008
2008-09	41873	19365	22508
2009-10	37745	15143	22602
2010-11	34847	17195	17652
2011-12	46556	10892	35664
2012-13	34298	7134	27164
2013-14	36046	9199	26847
2014-15	45148	4031	41117
2015-16	55457	8886	46571
CAGR	20.80%	15.80%	22.60%

Source: Reserve Bank of India report (2015-2016)

FDI

The gradual increase in outward investments also coincided with the time of financial crisis which first hit in 2007. The year 2008 also witnessed appreciation of the currency with average exchange rate at Rs 40.24/\$. The trend in India's outward FDI was moderately affected in 2010; a rebound was seen in 2011.

However, past two years witnessed a decline in these investments from \$ 17,195 million in 2011 to \$ 11,097 million in 2012 to \$ 7,134 million in 2013 and so on.

FDI in agriculture is studied under following major heads

- Agricultural services
- Agricultural Machinery
- Fertilizers
- Food processing industries
- Auxiliary sectors

Table-2 FDI inflows in agricultural and allied sectors 1996-2016

Years	FDI inflows in agriculture and allied sectors (Rs. millions)
1996-1997	41,353.27
1997-1998	33,148.63
1998-1999	14,080.55
1999-2000	3,233.64
2000-2001	3,995.05
2001-2002	3,678.97
2002-2003	13,921.09
2003-2004	5,349.55
2004-2005	9,625.88
2005-2006	11,310.40
2006-2007	7,513.63
2007-2008	11,588.58
2008-2009	32,788.65
2009-2010	78,945.95
2010-2011	18,330.68
2011-2012	27,930.82
2012-2013	4,48,028.60
2013-2014	2,93,900.20
2014-2015	97,301.16
2015-2016	83,426.52
CAGR (%)	16.10

Source: Department of Industrial Policy & Promotion, Ministry of Commerce & Industry

The FDI Inflows to Agriculture Services, machinery and fertilizers are allowed up to 100% through the Automatic Route. Highest FDI inflows [Table-2] in agriculture and allied sector was observed in 2012-2013 which is a post globalization and liberalization period where India opened up her economy for the world trade and lowest was in 1999-2000 which was the initial period of development of economy towards world trade with new agreements. Processed food accounts for 32% of the country's total food market and food processing sector has emerged as a major player in the Indian agriculture market by receiving noticeable FDI over the period, with the Compounded annual growth rate of 16.56% [Table-3].

Table-3 FDI inflows in food processing industry in India 1999-2015

Years	FDI (RS. Crore)	% Growth rate
1999-2000	444.06	
2000-2001	198.13	-55.4
2001-2002	1036.12	422.9
2002-2003	176.53	-83
2003-2004	510.85	189.4
2004-2005	174	-65.9
2005-2006	182.94	5.1
2006-2007	441	141.1
2007-2008	632	43.3
2008-2009	462	-26.9
2009-2010	1314.23	184.5
2010-2011	858.03	-34.7
2011-2012	826.16	-3.7
2012-2013	2193.65	165.5
2013-2014	25106.8	1044.5
2014-2015	515.86	-97.9
CAGR		16.56

Source: Department of Industrial Policy & Promotion, Ministry of Commerce & Industry

Highest FDI in this sector is recorded in the year 2013-2014 to the tune of 25106.78 Rs. Crore. It is because of the increased demand and changing consumer tastes and preferences for the ready to eat products. As of now total number of people employed in FDI plants is about 15,64,920. FDI and employment generation shows a significant relation in the Indian scenario as more than half of the work force has been stagnated in agriculture sector.

Two sectors that provide relatively high shares of total employment in FDI plants include 1. chemical products 2. Growing and processing crops, including tea and horticulture. FDI-enabled firms in manufacturing sectors provide employment to about 15.6 lakh persons accounting for about 4 to 5 percent of the total employment in the organised sector. 7.9 lakh workers have been employed in Small cities.

Bai -Perron test

This test has been conducted to know the structural changes in FDI inflows in India on unknown dates. Knowing the changes and reasons for the same helps to take decisions regarding FDI.

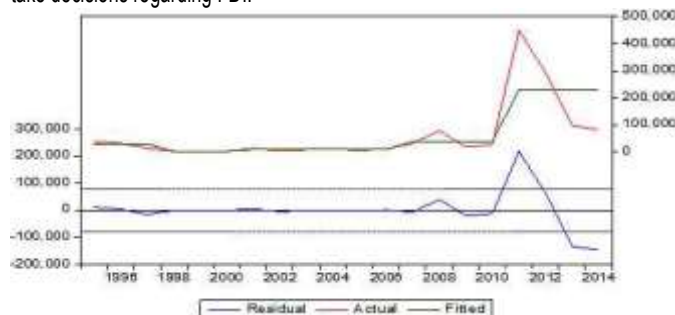


Fig-2 Structural changes in FDI inflows in agriculture and allied sectors in India 1996-2016.

Three breaks in the years 2002, 2009 and 2012. Probable reasons for breaks are mentioned below.

In 2002: Enactment of Foreign Exchange Management Act in 1999 with the objective of facilitating external trade and maintenance of foreign exchange market in India; After 2000 Government of India allowed FDI through automatic route in many of the sectors where there is no need of prior approval either of the Government or the Reserve Bank of India in all activities; India has signed for Double Taxation Avoidance Agreement and Bilateral Trade agreements with many of the countries during the same period.

In 2009: It is due to the world food price crisis that has occurred in 2007-2008, which prompted those countries that are heavily dependent on food exports to invest in country like India, as it is the second largest producer of food grains in the world.

In 2012: It is due to the major liberalization measure that Government of India allowed FDI through automatic route in Single Brand Retail (100%) and in Multi Brand Retail (51%).

Regression analysis

Table-4 Functional relationship between the FDI inflows in Agriculture and allied sector and GDP of Agriculture and allied sector:

R Square	0.983374
Adjusted R Square	0.978941
Observations	20

Intercept value = 28008.056

Variable	Coefficients	Standard Error	t Stat
Intercept	10.240247	0.6675562	15.3399
FDI _{agri}	-0.010198	0.0077075	-1.32311
GCF _{agri}	0.0628871	0.0297754	2.1120524
EXP _{agri}	0.1425671	0.0348607	4.08962
FER	0.0846562	0.0804946	1.0517004

98 Percent of the variation in the GDP of agriculture and allied sector is explained by the variables included in the model. Whereas FDI inflows in the agriculture allied sector are not significantly influencing the GDP of agriculture and allied sector.

Reasons for insignificant influence of FDI on GDP of Indian agriculture

Foreign investments are significantly higher in-service sectors and infrastructure development activities (Table 5, fig 3) compared to agriculture, is mainly due to seasonality of agricultural production in our country. Since agriculture is heavily dependent on monsoon, hence the production cannot be predicted accurately.

Lower crop productivity holds back the investors. Agriculture in India is not yet completely commercialized. India is predominated by small and marginal farmers with unconsolidated land holdings hence it is difficult to make huge investments.

Table-5 Sectors attracting highest FDI equity inflows (Rs. Crores)

SN	Sectors	Cumulative inflows (2000-2016)	% to total inflows
1	Services sector **	2,05,532	17
2	Townships, housing, built-up, infrastructure	1,13,140	10
3	Telecommunications (radio paging, cellular mobile, basic telephone services)	84,092	7
4	Computer software & hardware	73,235	6
5	Drugs & pharmaceuticals	65,282	5
6	Automobile industry	63,991	5
7	Chemicals (other than fertilizers)	49,310	4
8	Power	46,640	4
9	Metallurgical industries	41,147	3
10	Trading	43,799	3

Source: Fact sheet on FDI (April 2000-March 2015)

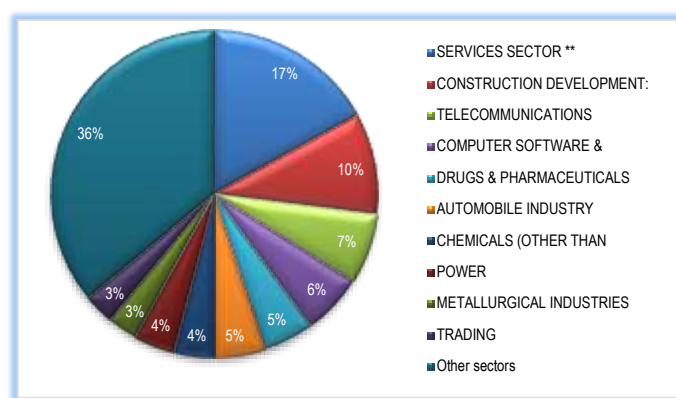


Fig-3 Cumulative FDI inflow

Conclusion

FDI Policy in Agriculture aims at attracting investment in technology, machinery, equipment's, seeds/ planting material, warehousing and cold storages and other infrastructure logistics. It complements public and private investments necessary to bring knowledge, technologies and services to farmers. From the study we can notice that the FDI inflows are growing at the rate of 20.80 percent and out flows at 15.80 percent and net FDI flows of India at 22.60 percent, indicating country's trade potential in overseas markets. FDI inflows in agriculture and allied sector are growing at the rate of 16.1 percent in which food processing industry takes a greater investment share. Reasons for structural breaks identified in 2002, 2009 and 2012 through Bai-Perron test helps the policy makers to take decisions regarding enactment of various laws and trading agreements. Last but not the least there is a need to boost investments in agriculture sector along with service and industrial sectors as food is the basic necessity and it provides livelihood and employment to more than 50 percent of the people in the country.

Suggestions

We also need to create better domestic agricultural infrastructure and market opportunities to attract foreign investors in this sector. Government must pay attention to attract FDI to improve the health of different sectors of Indian economy in general and agriculture in particular. The government must promote sustainable agriculture development through FDI.

Application of research: Study helps to analyse the international and national investments of the country. It further provides a way for improving its investments in foreign countries and can earn better from these ventures.

Research Category: Agricultural Economics

Abbreviations:

FDI: Foreign Direct Investment, GDP: Gross Domestic Product
EXP: Exports, GCF: Gross Capital Formation, FER: Fertilizer

Acknowledgement / Funding: Authors are thankful to University of Agricultural Sciences, GKVK, Bengaluru, 560 065, India

***Research Guide or Chairperson of research: Dr P.S. Srikantha Murthy**

University: University of Agricultural Sciences, GKVK, Bengaluru, 560 065

Research project name or number: PhD Thesis

Author Contributions: All authors equally contributed

Author statement: All authors read, reviewed, agreed and approved the final manuscript. Note-All authors agreed that- Written informed consent was obtained from all participants prior to publish / enrolment

Study area / Sample Collection: Work is based on secondary data collected from various sources and India as a country is considered.

Cultivar / Variety name: Nil

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.
Ethical Committee Approval Number: Nil

References

- [1] Deepak Kumar Adhana (2016) *International Journal of Economics, Commerce & Business Management*, 2(3), 1-45.
- [2] Abhishek Rao K.P., Gagandeep Bhalla and Geetha E. (2016) *IOSR Journal of Business and Management*, 4(2), 58-63.
- [3] Kapil Singh and Ritu K. Walia (2015) *Indian Journal of Research*, 3(4), 1-8.
- [4] Sandeep Kumar and Kavita (2014) *Socio-economic voices*, 4(7), 1-13.