

Relationship Between Foreign Direct Investment (FDI) Inflows In Agricultural Sector And Agricultural GDP In India: A Time Series Analysis

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Abstract: Agricultural sector is one of the most important sector which lies at the core of the socio-economic development of India and provide the livelihood of nearly 70% of total population. Agricultural GDP provides a good share towards the Gross Domestic Product of India. FDI inflows to agricultural sector is a good driver to boost the developmental process in this sector. Keeping in view the increasing importance of FDI in India, this paper tries to find out whether there is a significant relationship between FDI inflows in agricultural sector and agri. GDP in India. 100% FDI in agricultural sector has been allowed through automatic route under certain conditions as mentioned in consolidated FDI policy. The results of correlation analysis shows that the co-efficient of correlation between FDI in agri. sector and agri. GDP is 0.49 meaning that there is a positive correlation between the two which is significant at 0.05 or 5% level of significance.

Keywords: Agricultural sector, Foreign Direct Investment(FDI), Gross Domestic Product(GDP), India.

I. INTRODUCTION

Agriculture is the backbone of Indian economy and an important sector which determines growth and sustainability and plays a vital role in the development of India. Therefore agriculture lies at the core of socio-economic development and progress of Indian society and proper policy for this sector is crucial to improve living standard and welfare of the masses.

Indian economy is mainly an agriculture based economy and nearly 70% of the total population finds their livelihood from agriculture and this sector accounts for almost 19% of Indian GDP. With a population of about 1.2 billion, India requires a robust and modernized agriculture sector to ensure food security. Again agriculture is an important source of industrial development. Various industries like cotton and jute industries, sugar, vanaspati etc. directly dependent on agriculture. India's foreign trade is also deeply associated with agricultural sector. Agriculture accounts for about 14.7% to the total export earnings. Therefore development of agricultural sector is very important as it can enhance the

economic development of the country. Though presently agriculture sector accounts for almost 14% Indian's gross domestic product (GDP), yet its contribution has been declining in comparison to other sector which is a matter to worry about. Therefore proper steps should be carried out to enhance agricultural productivity.

After globalisation like other countries, India also welcome FDI in different sectors including agricultural sector. FDI can be one of the best ways to boost the agricultural sector in India by improving agricultural productivity and farm income. Foreign direct investment (FDI) plays a complementary role in overall capital formation by filling the gap between domestic savings and investment. FDI also provide employment opportunities that can reduce both urban and rural poverty (Elibarik M. 2007). By analysing the fate of agricultural sector in relation to FDI in Nigeria, Ogbanje E.C., at el. in their study finds that of the seven sectors into which FDI was classified, agricultural sector got the least average net flow of investment while manufacturing and processing sector had the highest mean net investment flow. Rapid investment

in technology development, irrigation infrastructure, emphasis on modern agricultural practices and provision of agricultural credit and subsidies are major factors contributed to agricultural growth and FDI in Indian agriculture sector increases employment opportunities (Srujana C. 2014).

Besides FDI, there are other internal factors that affects Indian agricultural sector greatly. Nature of soil, climate condition, transport facilities, level of irrigation, use of fertilizers, capital formation, level of literacy, institutional and non- institutional credit flows, minimum support price to agricultural products, use of electricity for agricultural purposes etc. are important factors that influence agricultural production and productivity. There is a greater need for public investment irrigation, credit availability, better marketing facilities, research and development along with adequate pricing and incentives for public investment.

Keeping in view the importance FDI in agricultural sector this paper tries to find out the relationship between FDI inflows in agri. sector and agri. GDP in India. Also it will give a look on the relative significance of different factors that affects agricultural GDP in India.

II. POLICY FRAMEWORK OF FDI IN INDIA

Policy framework is the key requirement for a country to make it one of the attractive and favourable destination for foreign direct investment (FDI). The Government of India has put in place a policy framework on foreign direct investment which is embodied in the Circular on consolidated FDI policy to capture and keep pace with the regulatory changes. The department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry, Government of India makes policy pronouncements on FDI through press notes/press releases which are notified by the Reserve Bank of India as amendments to the Foreign Exchange Management regulations, 2000. The liberalisation of industrial policy in 1991 introduced a two way approval process for foreign direct investment- Automatic approval route and Government approval route. FDI in sectors or activities under the automatic route does not require any prior approval either by Government or by RBI. All other activities which are not covered under the Automatic Route, prior Government approval for FDI/NRI shall be necessary.

Regarding agricultural sector in India, FDI up to 100% is permitted under the automatic route, subject to certain conditions mentioned in Consolidated FDI Policy, in the following agricultural activities: Floriculture, Horticulture, Apiculture and Cultivation of Vegetables & Mushrooms under controlled conditions; Development and production of Seeds and planting material; Animal Husbandry (including breeding of dogs), Pisciculture, Aquaculture, under controlled conditions; and Services related to agro and allied sectors.

OBJECTIVES

- The objective of this study are
- ✓ To study the status of India's agricultural sector.
 - ✓ To find out the relationship between FDI inflows in agricultural sector and agri. GDP.

HYPOTHESIS

It is hypothesised that there is no significant relationship between FDI inflows in agricultural sector and agri. GDP.

III. METHODOLOGY

This study is based on secondary data and data has been collected from different published sources such as handbook of statistics on Indian Economy, Department of Industrial Policy and Promotion(DIPP), Central Statistical Organisation (CSO), Ministry of commerce, Ministry of Agriculture, govt. of India etc. The period of study is 1991-92 to 2013-14. To find out the relationship between FDI inflows in agri. sector and agri. GDP, Pearson co-efficient of correlation analysis has been carried. Also augmented Dickey-Fuller test (unit root test) has been carried out to test the stationarity of data. Tables and graphs has been used to represent different data.

IV. STATUS OF INDIAN AGRICULTURE

Agricultural sector comprising agriculture and allied sectors is one of the stronghold of Indian economy and account for 18.5 per cent of the country's Gross Domestic Product (GDP). Indian agriculture has progressed a long way from an era of frequent droughts and vulnerability to food shortages to becoming a significant exporter of agricultural commodities. This has been possible due to persistent efforts at harnessing the potential of land and water resources for agricultural purposes. Contribution of agricultural growth to overall progress has been widespread. Increased productivity has helped to feed the poor, enhanced farm income and provided opportunities for both direct and indirect employment. Agricultural sector contributes a good share towards India's gross domestic product (GDP). Though its share has been declining year after year due to the up liftment of the share of manufacturing and services sector, yet agri. GDP has been increasing over the post liberalisation period. The following table shows India's GDP at factor cost and agricultural GDP and also the contribution of agriculture towards India's GDP-

Year	GDP at factor cost (in crores)	Agri.GDP (in crores)	% of agri. GDP to total GDP
1991-95	3090597	887205	28.70
1995-99	5536726	1451971	26.22
1999-03	8378027	1899610	22.67
2003-07	12941107	2470849	19.09
2007-11	23243416	4182923	17.99
2011-14	28253374	5050372	17.87

Source: Central Statistical Office (CSO), Ministry of Agriculture, govt of India

Table 1

The above table shows that both GDP at factor cost and agri. GDP has an increasing trend over time. The contribution of agri. GDP to total India's GDP has been decreasing over the period. The contribution was 28.70% during the period 1991-95 which reduced to 17.87% during the period 2011-14.

This is mainly due to the increasing importance of manufacturing and services sector as a result of which their contribution towards GDP has been increasing over time. Yet agri. GDP has an increasing trend which was 887205 crores during 1991-95 and increased to 5050372 crores during 2011-14 which is a good sign for agricultural sector.

The following figure the data representing the GDP at factor cost and agricultural GDP

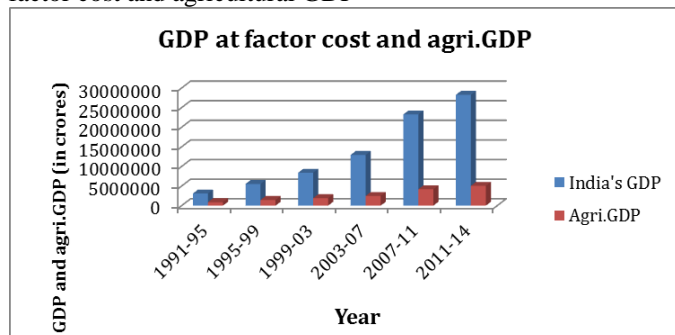


Figure 1

Agricultural sector is thus one of the most important sector in India and India has become world's largest producer of a range of commodities due to its rich agro-climatic conditions and rich base of natural resources. India is the largest producer of coconut, banana, milk and dairy products, pulses, turmeric etc. it is also the second largest producer of rice, wheat, sugar, cotton, fruits and vegetables.

But this promising sector has been facing many problems such as lack of proper irrigation facilities, old methods of farming in rural areas, lack of institutional credit to rural farmers, lack of high yielding varieties of seeds, poor agricultural marketing facilities etc. due to which both production and productivity in agricultural sector hampered. According to the Economic Survey 2014-15, growth rates of productivity in agriculture sector are far below global standards; productivity levels of rice and wheat have declined even after the green revolution of the 1980s. Another issue is soil degradation due to declining fertilizer-use efficiency.

Though India is an agrarian economy, but still much have to do to make this sector better one. Therefore appropriate steps should be taken by the govt. to increase the production and productivity in agricultural sector and also to improve the conditions of the cultivators.

V. FDI INFLOWS IN AGRICULTURE SECTOR AND AGRICULTURE GDP

Agricultural sector is the most important for an agrarian economy like India and FDI inflows to this sector can be proved very much influential in determining growth in agricultural GDP. The following table shows the total FDI inflows in agricultural sector in India along with agricultural GDP -

Year	FDI inflows (in million)	Agri. GDP (in crore)
1991-95	8584.97	887205
1995-99	22294.15	1451971
1999-03	28169.56	1899610
2003-07	32342.30	2470849
2007-11	150444.22	4182923

2011-14	453900.14	5050372
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Source: Ministry of Commerce and Industry, Ministry of Agriculture govt. of India

Table 2

The extent of FDI inflows was 8584.97 million during the period 1991 to 1995 which follows an increasing trend during the subsequent time period. FDI inflows increases to 22294.15 million during the period 1995-99 and further increases to 28169.56 million, 32342.30 million, 150444.22 million and 453900.14 million during the period 1999-03, 2003-07, 2007-11 and 2011-14 respectively. Agri. GDP also follows an increasing trend over the period of study. The trends in FDI inflows to agri. sector can be shown with the help of a diagram

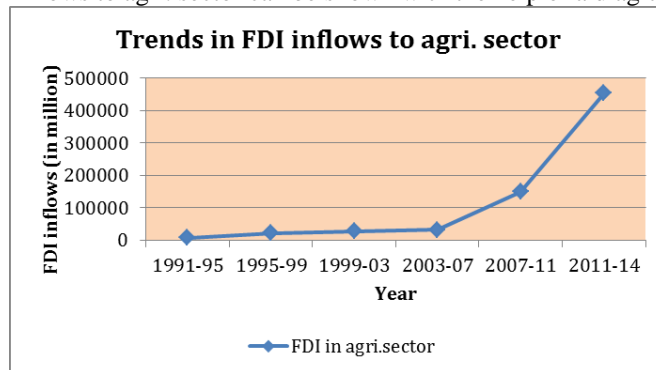


Figure 2

From the above trend line it is clear that FDI inflows to Agri. sector has a positive trend during the above period of study.

VI. AN ANALYSIS OF THE RELATIONSHIP BETWEEN AGRICULTURE FDI AND AGRICULTURE GDP

After making a study about the volume of FDI inflows in agri. sector and agri. GDP for the period 1991-92 to 2013-14, it is now important to find out the relationship between the two i.e. whether FDI inflows have a positive impact or negative impact on India's agricultural sector or find out whether the relationship is statistically significant or not. One of the important ways to find out the relationship between the two is correlation analysis to find out the correlation coefficient between the two. Correlation coefficient finds out the strength and direction of relationship between a dependent and an independent variable. In this correlation analysis FDI inflows is the independent variable and agricultural GDP is the dependent variable.

A. AUGMENTED DICKEY-FULLER (ADF) TEST RESULTS FOR STATIONARITY OF DATA

Before proceeding for correlation analysis it is necessary to test the stationarity of data. This can be done through the ADF test of unit root of the series of data. Null hypothesis (H_0) is that variable have unit root or not stationary and alternative hypothesis (H_1) is that variable are stationary at 5% level of significance.

The decision rule was that if the absolute value of calculated ADF test statistic is greater than the critical value at 95% confidence interval, reject the null hypothesis of non-

stationarity and accept the alternative hypothesis. Otherwise we should proceed for first difference of the data to make them stationary.

Result for ADF test for FDI inflows and agri. GDP can be shown as follows

Variables	Level	First difference	inference	Level of significance
FDI inflows	1.004	-6.110	Non-stationary I(0) Stationary I(1)	5%
Agri. GDP	-1.662	-6.807	Non-stationary I(0) Stationary I(1)	5%

Table 3

The results of ADF test reveals that initially both the variables are not stationary and hence null hypothesis is accepted that variables are not stationary. But first difference of both FDI inflows and agri. GDP are stationary at 5% level of significance.

B. RESULTS OF CORRELATION ANALYSIS

The results of the correlation analysis can be summarized in the following table

NULL HYPOTHESIS

H₀: There is no significant relationship between FDI inflows and agricultural GDP.

H₁: There is significant relationship between the two.

Level of significance set at 0.05 or 95% confidence level.

↓ Variables →	Agri. GDP	FDI inflows
Agri. GDP	1.000	
FDI inflows	0.4903 (0.0331*) sig	1.000

*Correlation is significant at 0.05 significance level.

Table 4: Results of correlation analysis

The result of the correlation analysis between foreign direct investment (FDI) and agricultural GDP presented in the above table shows that the correlation coefficient is positive and its value is 0.4903 or 0.49 which reveals moderately strong relationship between the two. This implies that volume agricultural GDP increases as FDI inflows increases. Specifically, agricultural GDP increases by 49% with 1 unit increase in FDI. The relationship is significant at 0.05% level of significance. Thus the null hypothesis is rejected and

alternative hypothesis is accepted implying that there is a significant relationship between agricultural GDP and FDI inflows to agricultural sector.

VII. CONCLUSION

Agriculture sector is one of the most promising sector and serves millions of people as their main source of livelihood and also provide food security to a largely populated country like India. Yet much have to be done by the govt. to make this sector one of the best one. It has been found in the above analysis that there is a positive relationship between FDI inflows in agricultural sector and agri. GDP. Yes it is true that there is a positive relationship between the two but the relationship is not strong enough as it is less than 0.5 and therefore govt. should take more appropriate step to ensure larger amount of FDI inflows to this sector so that it can go ahead in the path development in the coming years.

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