

RELATIONSHIP BETWEEN FDI DISTRIBUTION AND REGIONAL ECONOMIC AGGREGATES: AN EVIDENCE FROM INDIA

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Abstract

India is a rapidly developing country with diversified culture, language, economic status and resource distribution. Foreign Direct investment(FDI) brings employment opportunities, generate more income, lead to urbanization in the region. FDI has a growth impact on the targeted region. In India the problem of regional imbalances is very prominent and regional economic disparity is a major concern. This research paper made an attempt to check if the FDI inflow to the regions are significantly dependent on socio economic variables. The association between the variables is studied using Karl Pearson correlation analysis. The impact of regional socio economic factors on FDI inflow to the regions is also investigated in this paper using regression analysis. The data is collected for the time period of January 2000 to December 2016 from department of industrial planning and promotions, ministry of commerce and industries, Govt. of India, Ministry of economic affairs etc. The variables like income from agriculture, income from industry, per capita NSDP, population density, HDI, per capita GSDP, state GDP, annual wage per worker are found to have significant impact on FDI inflow to the regions and are in line with the existing literature. This piece of research can help the government, policymakers and analysts to introduce the policies that can attract more FDI to several regions ensuring India's economic growth.

Key words: *Regional economic aggregates, Foreign direct investment, Net state domestic product, gross state domestic product, population density.*

JEL classification: B40, C10, C12, F21, F39, H11

Introduction

India is a developing country with varied culture, language, economic status and resource distribution. According to the World Bank report (2016) India holds 7th position referring to nominal GDP ranking but it holds 134th rank referring to nominal per capita income. This indicates diversification in income distribution which leads to economic disparity. India is ranked at 68th position amongst all the

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countries in the world with 29.8% of the population living below the poverty line according to the world development indicator, World Bank report 2016. Thus, India still is struggling hard to eliminate the mass poverty. One of the major concerns of India is its regional economic disparity.

In India each and every region is endowed with some or the other type of natural resources which is not uniform in distribution and the government cannot redistribute these natural resources to ensure equality in the regional economic growth. Thus, the economic growth of the country is not homogeneous for all the regions.

The states and union territories in India are not identical with respect to their size, resource distribution, population density, per-capita income, literacy rate, skill and development, human development index and economic growth etc. Thus attracting foreign direct investments becomes very challenging for the Government due to these diversities. To minimize these diversities Government can build better infrastructure, educate and train the labor force to enhance the skill and improve the management. But the country lacks capital to spend in a huge scale towards the training and development and infrastructure building activities. Even though the government had adopted such programs previously, its effect takes a long time to bring 100% literacy level, well-developed rail network, road constructions, electricity supply to every citizen across the regions of the country. These heterogeneities in the distribution of infrastructure and human development index bring uneven distribution in the inflow of FDI amongst the various regional offices of RBI representing the respective states in India. As the states in India differ in their economic performance and social overhead capital, the FDI inflow to these states also varies significantly.

The rest of the paper is documented as, in section 2 literature review is discussed. Section 3 deals with objective and hypothesis, research methodology is discussed in section 4, section 5 depicts impact of socio economic variables on cumulative FDI inflow, Statistical analysis is discussed in section 6, the conclusion and implications are discussed in section 8.

Extant of Literature

FDI inflow and the economic indicators are well researched. However, some of the relevant research work is discussed in this section.

Ansari & Ranga² (2010), studied the trend and status of foreign investment in India and recommended policy reforms to boost flow of FDI to India. Their empirical study was with reference to the FDI data and economic indicators of the country from 2000 to 2009. They found that the foreign investors' faith on the return on investment increases if the economy is in track of immediate growth and the growth continues for next five to ten years without break. As Indian economy in the study period was in medium term prospects of growth at a rate close to 8%

and in few years it has touched 10%, the preference of the foreign investors has been growing with confidence.

Aggarwal¹ (2005) found that labour market in Indian states are significantly rigid and it discourages inflow of FDI to the region. However, in his study he found that the labour market rigidity is contradicting result for export oriented foreign investment and for the foreign investment seeking domestic market effect. His study suggested that to attract higher FDI both in the export oriented sectors and domestic market targeting sectors, the factors like human development, regional development and infrastructure development are also important.

Lall and Mengistae⁷ (2005) made a broad study on the causes of clustering of industries and industry location in the Indian Cities. He found that for the location choice decisions for the MNCs to carry out their business in India especially, the local/regional business environment has a significant role to play. The rigidity of business regulation and the insatiable enforcement of business regulations discourage the foreign investors to locate themselves internationally. It is also seen that new firms are attracted to locate their production site in the clusters where similar line of business is already established.

Santis et al¹⁵ (2001) studied the FDI flows within the European union member states and found that the overall tax burden and the corporate tax rates do impact the FDI inflow to the member states. However, they found the impact of overall tax burden were larger than the corporate tax rate. It means that the MNCs give greater priority to the overall tax burden than on single corporate tax rates when decision regarding their location choices is to be made. Along with the tax burden, bilateral degrees of trade openness and status and quality of infrastructure of the member states of the European Union have a considerable influence to attract FDI.

Using an online questionnaire survey on investors' specific characteristics and a multinomial logit model Chidlow and Young⁵ (2008) found that regional characteristics significantly affect the choice of location for foreign investment venture in Polish regions. They showed that Mazowieckie region (including Warsaw) of Poland attracted more FDI based on knowledge-seeking factors alongside market and agglomeration factors. Whereas for the other areas of Poland, low input cost, availability of labour and resources and geographic factors attracted FDI.

Luo et al⁸ (2008) found that the factors which were considered to be very strong and well established like, availability of natural resources and low wage rate were not significant to determine FDI flows to the regions of China. They studied a panel data from 1999 to 2005 covering 98 regions/cities of China and got that policy incentive of the regional governing bodies and industrial agglomerates in the form of Export promotion zones (EPZs) were the most important determinants for FDI flows. Similarly, Xu et al¹⁷ (2008), in their research study, used panel data from 1998 – 2007 for the provinces in China and found that the provinces in China have heterogeneous characteristics but they are

united. This agglomeration economy of regional economies (With two mega-cities Hong Kong, Shanghai) influenced the location choices of FDI in China.

Labour cost and labour quality are negatively correlated but they play an important role to make location choice in China when the FDI is targeted from the European countries and US. Further they opined that the new FDI entrants take a review of the record of cumulative FDI realized in an area and they generally select the one where the record shows highest number of FDI is received. This revealed a demonstration effect of location choice by the new entrants.

In an opinion survey conducted through personal interview of CEOs, managing directors and others who are intimately connected with the FDI decision of the business firms in the state of Gujarat, Morris¹⁰ (2005) recognized the importance of regional factors in the decision of foreign investors' location preference. The survey brought out the significant importance of quality governance and the necessity of infrastructure in FDI decisions at regional level. In infrastructure he found the poor quality of electricity supply, high price of electricity, adverse rules and regulations for availing electricity affect adversely the investment decision at the regional level. Similarly, he found communal strikes and riots and the perception bias in the implementation of law adversely affect the FDI inflow. Archana³ (2006) analyzed the impact of FDI on eight major states in India. She collected the time series data of FDI and macroeconomic indicators of the eight states along with the country data of the post- reform period from 1991-2004. She used Fixed Effects model (FE), Random Effects model (RE) and Seemingly Unrelated Regression (SUR) models. Fixed Effects model and Random Effects model give a holistic view of the FDI inflow to the eight Indian regions. Whereas the Seemingly Unrelated Regression model shows that overall FDI inflowing to the regions has a positive impact on labour efficiency and productivity and employment for the study period. She has also opined that the positive effect of FDI can be better realized when the benefit of the labour productivity exceeds the cost of unemployment resulted from technology change in the production process. The benefits from foreign direct investment in form of labour productivity arises because the introduction of advanced foreign technology through FDI spreads out a positive impact on domestic technology and improves the managerial skill. Archana⁶ found that the variations in growth of market size, gross capital formation, physical infrastructure and social infrastructure significantly explain the variation in FDI across the states.

Using Pearson's rank correlation method, Nunnenkamp and Stracke¹² (2007) found per capita bank deposits, telephone density, per capita income, population density, level of education and per capita net value added have strong positive correlation with FDI into manufacturing sectors in India. Their study also revealed that FDI inflow is negatively correlated with state population. Similarly, over the period 1991-2000, Nunnenkamp and Mukim Megha (2012) used panel data

regression models and observed that, along with various constituent distinctiveness, the availability of quality infrastructure determines FDI inflows into a state. The foreign investors prefer economically advanced location readily available for investment activities. Locations with relatively high per capita income and better infrastructure are the most preferred one over others to set up business by the foreign investors so that their products can get a good response from demand side by the local market of the prospective host country. Majumdar⁹ (2005) and Pal and Ghosh¹³(2007) found the state level infrastructure like transportation facility, electrification, airports, ports, education, telecommunication, healthcare and sanitization, etc have a significant influence on FDI distribution in Indian states. States with a better facilities receive major a share in the FDI distribution whereas the states poor in infrastructure get very little amount of FDI.

Shraddha& Morrison¹⁶(2006) examined the possible cultural factors like the presence of various religions, social background & cultural practices and political environment of the different states and their possible effect on FDI in different regions of India. In terms of implicit psychological attitudes, culture is often narrowly defined and very less analysis is done on the effects of cultural features explicitly on FDI to regional offices of RBI. They found a significant effect on FDI flows to the region comes from the social background and explicit cultural variables of the respective Indian regions under study. In addition, urbanization is also a significant factor having a positive effect on the FDI inflow to Indian states.

Ahluwalia¹ (2001), studied the relationship between the investment climate of the regions and the FDI inflow to the regions. He stated that more foreign investment comes to those states which have strong investment climate, whereas the states with weak investment climate could not attract significant amount of investment from the foreign investors.

In the studies related to Indian context, Goldar⁶ (2007) studied 17 states of India to analyze location choice for factory setup across 100 largest cities using econometric analysis. He found that the location choice decision of both domestic firms and foreign firms is influenced more or less by the same set of factors. He found the city-size and existence of a metropolitan city in a state also has positive impact on the location decisions of industrial plants. It is because MNEs prefer to start the company head-quarters in a metropolitan city of the host country. Further, he found that multi-national companies were inclined by the investment climate of the economic environment, the availability of civic amenities like power supply, water supply, schools, hospitals etc in the cities and the accessibility of skilled educated workers in the state to select the location for factory setup and plants. Morris¹⁰(2007) supported the findings of Goldar⁶ (2007) and argued that the preference to setup the Headquarters or Company Head offices in the metropolitan cities over small cities in India have extra advantages

in the form of added operational efficiency. That is the reason why the metropolitan cities in India attracted a lion's share of the FDI inflows.

Ramachandran and Goebel¹⁴(2002) pointed out that the political stability, strong and stable government with pro-active government policies, investor-friendly and transparent decision making process made Tamil Nadu one of the dominating locations to attract foreign investment. The state has also added advantages in the form of adequate amount of industrial infrastructure which is diversified in nature, comfortable power situation, Easy availability of skilled manpower, satisfying industrial relations and absence of labor unrest, high quality of work culture and peaceful life, best incentives package in the country, highly cosmopolitan public and high proportion of English speaking population. Tamil Nadu has got plenty of FDI in the IT sector.

Some studies on FDI inflow in India are conducted to study the region choice for setting up plant or company headquarters. But this is not enough to tell the socio-economic factors influencing FDI inflow to the Indian regions. The studies on FDI in India which has taken macroeconomic variables like wage rate, amount of natural resources, state GDP or the market size as the various factors affecting the location choice for investment by the foreign investors are not thickly available. Thus our study takes an attempt to find out the regional factors like social and economic indicators at the regional level affecting FDI inflow to the Indian regions. These variables are Human Development Index of the Regions, Literacy Rate, Percapita State GDP, Growth Rate of State GDP, Region's Income from Industry, Region's Income from Services, States Tax Revenue, etc. Thus, the present study highlights the significant determinants of FDI inflow at the regional level and finds out whether the general perception about the reasons for higher FDI concentration go true or there is any exception in the expected relationship of the described determinants with the regional FDI.

The foreign investors also follow a similar pattern while deciding the location of investment. Nurkse, an eminent economist said poverty is self-propelling. In his words, "a country is poor because it is poor". In a similar manner we can say the reason of regional economic disparity is the regional economic disparity itself. That is basically the cause of economic inequality in the regions can be found and solved in the region only. One of the methods to meet the deficiency of capital requirement is by encouraging large domestic companies and inviting Multi-National Companies (MNCs) to produce goods and services and operate their business full fledged in the underdeveloped or backward regions. If the country is again a capital deficit country then the only alternative left is to invite MNCs. MNCs generally do come with Foreign Direct Investment (FDI) with an objective either to reduce the cost of production significantly or to conquer the market where import is discouraged to protect the domestic producers or with a hybrid objective too. Thus the inflow of FDI is dependent on the local

market whether it is the product market or the factor market. In product market the foreign investors will look at the regional income level or the market size and in the factor market they will look forward to get skilled labour, quality raw materials, etc at a cheaper cost. In our study we take the state GDP, population density and the state percapita income as a proxy of the local market size and the annual wage per worker and the state literacy rate are considered as a proxy for the quality of the factor market.

Objective of the study

To check which regional socio economic factors affecting FDI inflow to the regions significantly.

Hypothesis of the Study

Null Hypothesis: FDI inflows to the regions are not significantly dependent on socio-economic variables.

Alternative Hypothesis: FDI inflows to the regions are strongly dependent on socio-economic variables.

Research Methodology

Data Collection: The data required for the study is collected from various secondary sources. The FDI data is collected from the department of industrial planning and promotions (DIPP), Ministry of Commerce and Industries, government of India. These are the published data supplied by DIPP at regular time interval on FDI received by the RBI's regional offices located in different state capital of the country. This data is available from January 2000 to December 2016. Similarly, we got the data on social and economic conditions from the published data of Census 2011 and the Ministry of Economic Affairs, Government of India. The data on Contribution of Agriculture, industry and services to the state GDP is considered for the year 2014-2015. All the periods are not identical for the various socio-economic parameters as different government agencies being the owner of the information, supply the data at different period. In this paper sixteen regional offices responsible for receiving FDI for the different states and union territory of the country are studied. As they represent their states, so the socio-economic information are mentioned against the region and they inherently meant it for their respective states.

No sampling procedure is followed in the study as the cumulative FDI Data is available since year 2000.

For the statistical test we will use Correlation, Regression and Anova to verify the link between the explained variables like state GDP (GSDP) States Tax revenue Percent ratio to NSDP, Percapita NSDP, Growth Rate, Population Density, Literacy Rate, Annual wages per worker, Agricultural Allied, Industry, Per Capita GDP, HDI with the FDI inflow to the regions or Indian states. In this

paper, attempt is made to find out the relationship of various economic aggregate of the regions/states with the dependent variable FDI inflow into the regions.

The impact Socio Economic variables on cumulative FDI inflow

The socio-economic variables are believed to be influential in the foreign investment decision making. The state GDP, Literacy rate, Annual wages per worker, per capita GDP, Population Density, Per capita NSDP, Agriculture & Allied, Industry, Services, Total GDP in INR, Growth rate, States own Tax revenue as percent to NSDP are considered to be the proxy of market size, factor cost, factor availability, states policy, etc. to know whether these variables have any influence on the FDI inflow or not we will first see the coefficient of correlation exists or not. If significant amount of correlation exists, then which socio-economic variables affect the FDI inflow significantly? For this purpose, we will conduct the statistical tests for the following table.

Table – 1: Socio-Economic Status of the Indian Regions

RBI Regional Office	Cumulative inflow from 2000-2016 (in Million Rupees) #	Literacy Rate (Per cent) 2011	Annual Wages per Worker (Rs) 2009-10 #	Per-capita GDP (2014-15) #	Population Density (Persons per sq. km) 2011	Per Capita NSDP (Rs) 2014-15 #	FDI inflow in 2016 #	Agriculture & Allied (2014-15) #	Industry (2014-15) #	Services (2014-15) #	Total GDP in INR (Ten Mn) (2014-15) #	Growth Rate (2014-15)	State's Own Tax Revenue as % to NSDP 2014-15	HDI (2015)
Mumbai	5,343,691.71	82.9	103406	152,853	365	117091	1466333	150621.7	382715	715116	1686695	11.69	7.8	0.57
New Delhi	3,653,348.94	86.3	69820	275,174	11297	212219	466475	2739.35	54500	256694	451154	15.35	6.7	0.75
Chennai	1,262,361.83	80.3	68422	146,503	555	112664	91802.1	77654.53	192174	369195	976703	14.34	10	0.57
Bangalore	1,204,345.28	75.6	83219	144,869	319	89545	162814.6	74387	125990	258525	702131	14.24	10.5	0.52
Ahmedabad	866,873.09	79.3	76316	141,405	308	106831	233769.6	96862	194778	221532	775469.53	13.68	7.8	0.52
Hyderabad	705,821.64	67.7	61007	141,979	308	81397	162520.8	140343	186172	349282	520030	12.03	8.9	0.47
Kolkata	211,740.71	77.1	71626	87,672	1029	70059	7736.83	128062	99735	313788	800868	13.35	4.9	0.49
Chandigarh	65,763.57	76.6	90347	250,398	573	133427	673.42	63734	86978	158232	435310	11.93	7.2	0.55
Bhopal	68,030.22	70.6	82730	63,323	236	51798	3424.69	78717	90515	146154	508006	16.86	8.8	0.37
Kochi	95,789.38	93.9	54994	155,005	859	103820	29515.3	46586	69483	210624	405106.67	14.57	8.9	0.79
Panaji	40,421.95	87.4	126788	304,666	394	224138	412.39	2155	21962	20343	51580.95	14.02	7.3	0.62
Jaipur	81,814.37	67.1	65995	84,837	201	65974	3725.25	98564	105337	164418	574549	11	6.7	0.43
Bhubaneshwar	20,599.50	73.5	91921	71,184	269	52559	650.34	41697	82135	102404	310810	13.86	6.3	0.36
Kanpur	30,160.11	69.7	68048	49,450	828	103716	1402.11	193419	152098	342319	138723	12.88	7.7	0.38
Guwahati	4,565.88	73.2	49332	60,621	397	44263	331.14	32191	26862	56354	183798	15.26	6.3	0.44
Patna	6,087.26	63.8	43362	33,954	1102	31199	688.74	66185	46394	140113	402283	17.06	5.2	0.36

Source: SIA Newsletter January 2017, DIPP. Ministry of Commerce, India

Normality Check:

To check if a data follows normal distribution, we conducted a normality test by applying Shapiro-Wilks test tests. The test is also used to find out the likelihood of the data under study following normal distribution. There are two similar tests, those are, Kolmogorov-Smirnov test and Shapiro-Wilks test to ensure the sample distribution satisfies the normality of data and a bell-shaped curve is found when the data is plotted on a graph paper. The normality in the sample distribution confirms the normality of the population that the sample represents. For the tests on sample of n lesser or equal to 50, Shapiro-Wilks test is used. The normality test hypothesis can be defined as follows:

- H_0 : the observed distribution is normally distributed
- H_1 : the observed distribution is not normally distributed

Table - 2 (A): Tests of Normality
(Cumulative FDI Inflow on Regional Socio-economic Variables)

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Cumulative_FDI_Inflow	.298	16	.000	.599	16	.302

a. Lilliefors Significance Correction

The test statistics are shown in table 1. Here two tests for normality are performed. In this case, though the sample size is less than 50, Shapiro Wilk's test will be referred to check with the normality of the data. The p-value is 0.302. So we are failed to reject the null hypothesis. Thus the test result confirms that the data satisfies the condition of normality and it represents the population without any biasness.

Results of Multiple Regression Analysis

Table - 2 (B) is the descriptive statistics that shows the means, standard deviations, and the number of sample observations when studied for the impact of **Regional Socio-economic Variables** on FDI inflow to Indian regions.

Table – 2 (B): Descriptive Statistics
(Cumulative FDI Inflow on Regional Socio-economic Variables)

	Mean	Std. Deviation	N
Cumulative_FDI_Inflow	460488.1019	844140.92236	16
Literacy_Rate	76.5625	8.20568	16
Annual_wages_per_worker	75458.3125	20981.23667	16
Per_Capita_GDP	76623.5000	45088.89642	16
Popn_Density	1190.0000	2710.51889	16
Per_capita_NSDP	67625.7500	42034.68476	16
Agricultural_Allied	80869.8869	52796.36718	16
Industry	119864.3481	89379.34910	16
Services	239068.4981	164151.57338	16
Total_GDP_INR	439802.9225	286987.21137	16
Growth_Rate	.1569	.04110	16
States_Taxrevenue_Perrcent_NSDP	7.5625	1.57813	16
HDI	0.5140	0.1208	16

In Table 2 (C) the square correlation matrix is displayed for FDI inflow to regions and the regional economic variables. The results correlation analysis are shown in two major rows: the first row shows the coefficient of the Karl Pearson's correlation (r) values between the variables in their respective row and column and the second row contains the significant level of the co-efficient of correlation or the probabilities of obtaining those values if the null hypothesis was true. In the Table 2 (C), the first row and the first column show the dependent variable, i.e., Cumulative FDI Inflow to the region and its relation is compared with the other variables those we entered in the order we want them to appear in our analysis.

Table – 2 (C): Karlpearson's Coefficient of Correlations
(Cumulative FDI Inflow on Regional Socio-economic Variables)

	Cumulative_FDI_Inflow	Literacy	Annual_wages_per_worker	Per_Capita_GDP	Popn_Density	Per_capita_NSDP	Agricultural_Allied	Industry	Services	SGDP	Growth_Rate	States_Taxrevenue_Perrcent_NSDP	HDI
Cumulative FDI Inflow	1												
	.												
Literacy	.360	1											
	.171	.											
Annual wages per worker	.272	.373	1										
	.309	.155	.										
Per Capita GDP	.457	.722(**)	.547(*)	1									
	.075	.002	.028	.									
Popn Density	.415	.320	-.117	.563(*)	1								
	.110	.227	.667	.023	.								

Per capita NSDP	.380	.713(**)	.594(*)	.991(**)	.505(*)	1							
	.147	.002	.015	.000	.046	.							
Agricultural Allied	.147	-.413	-.131	-.466	-.377	-.493	1						
	.586	.111	.629	.069	.150	.052	.						
Industry	.696(**)	.038	.206	.002	-.217	-.058	.676(**)	1					
	.003	.888	.443	.994	.419	.832	.004	.					
Services	.780(**)	.131	.071	.061	.034	-.008	.668(**)	.909(**)	1				
	.000	.628	.794	.822	.899	.976	.005	.000	.				
SGDP	.690(**)	.011	.081	-.050	-.117	-.113	.777(**)	.956(**)	.978(**)	1			
	.003	.968	.766	.854	.665	.676	.000	.000	.000	.			
Growth Rate	.133	-.368	-.564(*)	-.283	.240	-.358	.156	.034	.136	.117	1		
	.623	.161	.023	.288	.371	.173	.563	.900	.615	.665	.		
States Taxrevenue Perrcent NSDP	.135	.233	.133	.116	-.187	.105	.111	.360	.274	.290	-.219	1	
	.617	.386	.623	.669	.488	.698	.682	.170	.304	.277	.416	.	
HDI	.396	.903(**)	.139	.778(**)	.499(*)	.744(**)	-.402	.008	.166	.024	-.107	.265	1
	.129	.000	.607	.000	.049	.001	.123	.977	.538	.931	.692	.322	.
N	16	16	16	16	16	16	16	16	16	16	16	16	16

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

The result of the correlation test says Industry performance, service sector performance and the volume of state GDP are significantly correlated to the cumulative FDI inflow to the states. In Table 2 (C), though the absolute value of Karlpearson's coefficient of correlation are lesser than 0.7, there is no collinearity problem exists in the data. Thus, to check how well the independent variables like Literacy rate, Annual wages per worker, per capita GDP, Population Density, Per capita NSDP, Agriculture & Allied, Industry, Services, Total GDP in INR, Growth rate, States own Tax revenue as percent to NSDP, HDI, etc., explain the dependent variable i.e.; Cumulative FDI Inflow, the R-square value is taken into consideration. Table –3 (A) provides a Model Summary through R-square value that explains the variation in the dependent variable due to the variation in the independent variables.

Table –3 (A): Model Summary^b
(Cumulative FDI Inflow on Regional Socio-economic Variables)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.977 ^a	.955	.866	309453.71687

a. Predictors: (Constant), States_Taxrevenue_Perrcent NSDP, Per_capita NSDP, Services, Growth_Rate, Popn_Density, Literacy_Rate, Annual_wages_per_worker, Agricultural_Allied, Industry, Per_Capita_GDP, HDI

b. Dependent Variable: Cumulative_FDI_Inflow

Table –3 (A) displays the Model Summary which provides the R^2 and Adjusted R^2 values, those are 0.955 and 0.866, respectively. This shows that the predictor variables in combination explains 95.5% of the variation in Cumulative FDI Inflow. There is a loss of strength in computing the Adjusted R Square value

to a very small amount (by 9%), which may be primarily because we have taken relatively a small number of predictor variables for our sample data. To check the significance of the model ANOVA is used. The result is as follows:

Table –3 (B): ANOVA ^b (Cumulative FDI Inflow on Regional Socio-economic Variables)

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1021000000000.00	10	1021000000000	10.662	.009 ^a
Residual	478800000000.00	5	95760000000		
Total	1069000000000.00	15			

a. Predictors: (Constant), States_Taxrevenue_Perrcent_NSDP, Per_capita_NSDP, Services, Growth_Rate, Popn_Density, Literacy_Rate, Annual_wages_per_worker, Agricultural_Allied, Industry, Per_Capita_GDP

b. Dependent Variable: Cumulative_FDI_Inflow

Table 3 (B), shows the test of significance of the model through the Analysis of Variance (**ANOVA**). There are 15 total degrees of freedom. The **ANOVA** test says that the Regression effect is statistically significant as we get the significance value to be 0.009 and it is less than 0.05. It indicates that the dependent variable can be predicted better with the predictors in our study. The detailed result of the regression analysis with their relative strength of effect on dependent variable is mentioned in Table – 3 (C) as follows:

**Table – 3 (C): Coefficients^a
(Cumulative FDI Inflow on Regional Socio-economic Variables)**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	56473.881	1758044.39		-.032	.976		
Literacy_Rate	-7939.028	18892.463	-.077	-.420	.692	.266	3.764
Annual_wages_per_worker	7.897	6.814	.196	1.159	.029	.312	3.202
Per_Capita_GDP	.785	27.045	.042	.029	.033	.204	2.930
Popn_Density	101.694	70.146	.327	1.450	.0120	.277	5.663
Per_capita_NSDP	.514	27.788	.026	.018	.0211	.305	3.716
Agricultural_Allied	-9.475	3.262	-.593	-2.905	.034	.215	4.646
Industry	4.852	3.795	.514	1.279	.0025	.255	3.021
Services	3.676	1.974	.715	1.862	.0122	.261	4.454
Growth_Rate	1459039.10	3037637.33	.071	.480	.651	.409	2.442
States_Taxrevenue_Perrcent_NSDP	-55581.465	59216.787	-.104	-.939	.391	.331	2.368
HDI	2103213	4030475	0.319	0.521	0.092	0.0171	5.493

a. Dependent Variable: Cumulative_FDI_Inflow

Table 3 (C) provides the details of the Regression Coefficients results. The Zero-order column under Correlations lists the Pearson r values of the dependent

variable (Cumulative FDI Inflow) with each of the predictors. Tolerance and VIF (Variation Inflation Factor) are the two measures used for checking the multi-collinearity in the data. It is observed here that the Tolerance limit for all the independent variables are greater than 0.19 and the VIF for all the independent variables are lesser than or equal to 5.9. It is observed that the Tolerance and VIF for all the variables lie within the acceptable range. Thus it can be concluded that the data is free from the multi-collinearity problem.

The Y intercept of the raw score model is labeled as the Constant and has a value here of 56473.881. of primary interest here are the raw or unstandardized (B) and standardized (Beta) coefficients, and their significance levels determined by t tests. The predictors like annual wages per worker, per capita GDP, Population density, Per capita NSDP, Agriculture & Allied, Industry, Services etc. are statistically significant. Literacy Rate, Growth Rate, States own Tax revenue as percent to NSDP are found to be insignificant.

The unstandardized regression coefficients are partial regression coefficients because their values take into account the other predictor variables in the model. These regression coefficients inform regarding the predicted change in the dependent variable if predictor increases by one unit.

It is observed in Table 3 (C), Annual wages per worker has got a positive β -coefficient. It is associated with a partial regression coefficient of 7.897 and signifies that with every one-unit increase in the Annual wages per worker, there will be a gain of 7.897 points in the cumulative FDI Inflow. Similarly, Per Capita GDP has got a positive β -coefficient and is associated with a partial regression coefficient of 0.785. It signifies that with every one-unit increase in the Per Capita GDP, we would expect an addition of 0.785 units in the cumulative FDI Inflow measure. Similarly, the variable, Population Density has got a positive β -coefficient, that is 101.694, which indicates the increase in the Population Density by one unit would help to gain 101.694 units in the cumulative FDI Inflow.

The partial regression coefficient for the variable Per Capita NSDP is found to be significant and has a positive β -coefficient of 0.514. It indicates that when the Per Capita NSDP increases by one additional point, it is expected that the cumulative FDI Inflow measure will increase by 0.514 points. However, the variable Agriculture & Allied has got a negative β -coefficient of -9.475 and it signifies that for every incremental unit in the income from Agriculture & allied, we would forecast a reduction of 9.475 points on the cumulative FDI Inflow measure. The variable Industry has a positive β -coefficient of 4.852 and one unit change in this variable will cause a gain of 4.852 points in the Cumulative FDI Inflow. Similarly, the variable Services has got a positive β -coefficient of 3.676 and one unit change in this variable will cause a gain of 3.676 points in the Cumulative FDI Inflow. Growth Rate has got a positive β -coefficient of 1459039.101. It indicates that for each extra point on the Growth Rate, we would

foresee an increase by 1459039.101 points on the cumulative FDI Inflow measure. At last we found HDI has also a positive impact on the cumulative FDI inflow. One unit gain in HDI will add 2103212.695 units in cumulative FDI inflow. HDI has got the highest impact on cumulative FDI inflow.

From the literature review of FDI related studies, the explanatory variables are expected to affect the FDI in a particular direction but in our studies some of the variables affect the FDI in a different direction. The resultant impact of the predictor variables along with their significance status is given in detail in table - 4.

Table - 4: List of Explanatory Variables Selected for Cumulative FDI inflow to Indian Regions

Type of factor	Variables	Expected Sign	Realized Sign	Significance Status
A. Market size	1. Per capita NSDP	+	+	Yes
	2. Population Density	+	+	Yes
	3. HDI	+	+	Yes
	4. Percapita GSDP	+	+	Yes
	5. State GDP	+	+	Yes
B. Labour Conditions	6. Annual Wages per worker	-	+	Yes
	7. Literacy rate	+	+	No
C. Policy Environment	8. State's own tax revenue as per cent of NSDP (TAX)	-	-	No
D. Economic Performance	9. Income from Agriculture	+	-	Yes
	10. Income from Industry	+	+	Yes
	11. Income from Services	+	+	No
	12. Growth rate	+		Excluded

The above discussion and the tests we conducted are for the dependent variable cumulative FDI inflow to the regions from January 2000 to December 2013 and it is done with a purpose to know what are the main determinants to influence the cumulative FDI inflow from the past till now. We will repeat the same set of test to verify what are the factors those significantly affect the percapita FDI in the contemporary period by taking the Percapita FDI of 2013 as the dependent variable and the same set of independent factors as we discussed in table 4, but some of the explanatory variables in the factors may be different.

Conclusion and Implication

We found the economic variables like income from agriculture, income from industry, state GDP are significant in determining the inflow of FDI to regions. The socio-economic variables showing the demographic conditions of the regions like population density, Human development index, percapita NSDP, percapita GSDP and Annual wages per worker are significant in deciding the dependent variable that is the regional FDI. But the annual wage per worker

contradicts the expected relation with the FDI. It says that it's not the cheap labour rather the skilled labour attracts foreign investors. Thus, the Skill India programme will definitely boost the regional economies. Income from Agriculture also shows a contradicting relationship from the expected one but for the states/region it is difficult to have a control on it. Only through skill development the workers can lead a better quality of life and the economy can produce more and generate more income. Finally, this will lead to a higher demand for goods and services and in turn a higher quantity of FDI. The regions should now compete with each other in creating skilled workforce. The sooner a state or a region identifies this secrete, the faster it can grow. This piece of research work will be beneficial for the Government to attract more FDI inflows to the country and the states as well and also to distribute the same in a balanced manner to ensure maximum economic growth.

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