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**Article**

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# EXTENSIVE ROLE OF FOREIGN DIRECT INVESTMENT IN DEVELOPMENT OF INDIAN ECONOMY

**Amit Saini**<sup>1</sup>  
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## **Abstract**

Since 2001, the extensive growth in domestic economy were potentially associated with the scale of foreign direct inflows that were largely interconnected with industrial growth, re-shuffling investment policies, and availability of large market size in India. However, the government remained much restrictive earlier in these issues to protect the domestic entrepreneurs along with to promote the self-efficacy among individuals. Within this framework, this paper is being prepared to observe the degree of effect of foreign direct investment inflow over successive economic parameters such as gross domestic product and Export. Moreover, to define such interconnection, the generalized linear model econometric model has been developed to analyze the overall effect and uni-variate effect over three categorical factors i.e. country, year and foreign direct investment itself. Finally, the results shown, the consistent foreign direct investment inflows is the result of successive years that led to increase the prestige of gross domestic products and Export in many folds during a period from 2000 to 2012.

**Keywords:** extensive growth, generalized linear mode, financial needs, policies framework, gross domestic product.

*Jel Classification:* F15; F21; F35

## **INTRODUCTION**

Since independence, the contingent to import substitution policies instead dependent over external aid and strict state regulations in acceleration of domestic production, India has begun to adopt a liberal pattern i.e. framed new economic policies in 1991. The NEP has progressed successively in the area of external investment inflows, export advancement, and promotion in economic and financial sector of country. While the

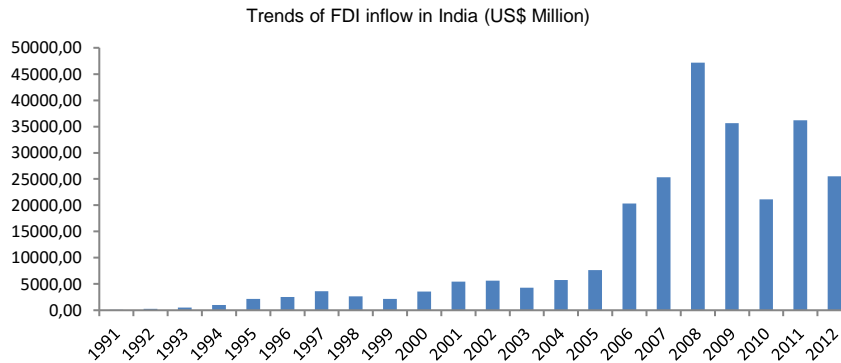
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economy has pursued the NEP to stimulate the standard of self-reliance, to enlarge the scope of export and established the production centers to pay the amount concerned to imports. FDI especially inflows bring the extra capital, advance technology, managerial skills that access the regional economy in concern to expand the export and GDP of host country (UNCTAD 2002). In East Asian Economy, the large expansion in export-led growth continued in connection of FDI investment i.e. technology advancement and knowledge transfer in order to exploit the advantages possess in domestic countries. With mildly shift from piece meal approach in foreign investment during 80's to develop more liberal open door policies in 1990's, India has gradually opened the numerous sectors for welcoming the FDI. In this process, the supportive measures were taken includes to abolish the foreign equity participation limit of 40% as prescribed in FERA Act 1973, liberalizing the import of technology, permitted 24% foreign equity in small units, abolishing the restriction over foreign brand names in domestic firms and reducing corporate tax (Rao and Dhar 2011). In India, the FDI is primarily permitted in sectors specified by government including service sector except the reserved sectors that have the different policies of government of India. Moreover, the entrance of investment is prescribed in the way of routes some of the FDI brings through Automatic route where need to take permission through regional centers established and remaining through government approval that is recommended by FIPB. Within this scenario, this paper emphasis over two matters first to what extent of FDI draw in country and second whether any interconnection between FDI inflows, GDP and Export in all three activities of country. The rest of the paper designs as follows: Then section I presents the trends of FDI inflows in India during the period 1991–12. Section II reviews of existing literature available on the subject. Section III discusses the methodology and models framed for this study. Section IV analyses the interconnection between FDI, GDP and Exports and prepares the results.

## **1. STATUS OF FDI INFLOW IN INDIA**

Before exploring the influence of FDI inflows over GDP and Export, this section highlights the trends and performance of FDI in Indian economy from pursuance of new economic policies (NEP) to till year 2012. Since liberalization, the new policies for trade and investments activities began to effect largely reason being the country has emerged as a suitable destination for FDI purpose in regards of diverse work force, sizable market and sound infrastructure (Sahoo 2006). In this progression, the advanced countries look forward largely for investment in various activity i.e. primary, secondary and tertiary. Along with, the several proposals have been accepted widely in the area of service sector especially in financial and telecommunication service through Mauritius route that accounted approx. 40% of FDI alone. Similarly, the stock of FDI jumped in many folds in recent twenty years.



**Figure 1.** FDI inflow in India from 1991 to 2012

Source: Data retrieved from annual online UNCTAD database, 2012.

In India, FDI is the composition of equity capital, re-invested earning and other capitals. Statistically, the FDI inflow figure shows the trend i.e. US\$ 50 Million in 1991 to US\$ 46553 Million in 2011–12 (UNCTAD 2012). The investors preferably shown the tremendous interest in FDI especially inflow in most profitable sectors. Initially, the capital arrival ratios in India were continuous till 1998. Afterwards, the FDI inflows started to fluctuate to couple of years caused to East Asian currency crisis and Pokhran test carried by India. On that, the US companies put restrictions over Indian companies ultimately the economy suffered heavy loss. In year 2000–01, the sequence of FDI inflows jumped in adoption of international approach for measurement of FDI. Afterwards, it reduced again to subsequent years because of inactive industrial growth (Kumar 2005). Since year 2003–04 onwards, the progression took speed in association of strong macroeconomic fundamentals, recovery in industrial growth and developing in robust GDP base. However, the government also reshuffled the investment policies and allowed FDI through automatic route upto 100% along with enactment of SEZ Act 2005. The outcome of these successive conversion were completely unexpected i.e. about 150% rise in FDI from year 2003 to 2007 that raised sharply the scale of GDP and demand of domestic produce i.e. export rise at international level. Till mid of 2008, the scale of FDI increased in all developing countries. In 2008's third quarter, the US credit crisis dumped the economy worldwide. The consequence was the companies started to close the units to escape with the effect of sudden crisis. However, India was the least effected country still the trends of FDI reduced due to global inflationary pressure. Globally, the China has recorded 17.45% of developing country cumulative FDI whereas India marked about 6.69% of same in year 2008 (Pradhan 2010).

## 2. EARLIER LITERATURE AND OPEN QUESTIONS

This research is basically being conducted to present the status of proportionate influence of FDI inflow towards Indian economy especially in export promotion, technological advancement, and appreciation in scale of GDP. Moreover, the authors have framed the purpose for this research on the experience of reviewing available vast literature

discussed by prominent authors during different time decades. Further to get the more constructive view about previous studies, the literature is being translated in to tabular form on factor basis in order to cast more relevance to the study.

### **2.1. Pre 1991**

In this process, Solow (1956) worked empirically to develop a neo-classical model in order to examine the trends of growth associated with the entrance of FDI. He focused over technical growth and availability of labor forces and argued these factors are directly co-related with the income. On contrary, he advocated the nonexistence of technical progress and labor force cause to harm in long run growth. Hymer (1978) raised the questions in his doctoral thesis why foreign based MNCs wish to invest in specific location? For this, he analyzed the potential determinants such as advance technology, managerial know-how and competitive advantages and redress the question that firms want to exploit or get monopoly over advantages possess in recipient country. Generally the MNC's prefer to obtain ownership right in domestic trade market to exploit the available best locational factors in most possible way. Simultaneously, these locational, internalize and ownership factors that are hidden utilization with the availability of FDI by MNC's for host country (Dunning 1979). Brecher and Diaz-Alejandro (1977) analyzed the studies conducting during the time and produce the evidence in the light of trade distortion such as high tariff that FDI inflows lower the growth in rappings of high exploited profit earning in host country. In the same sequence Griffin (1970) and Weisskopf (1972) have developed a hypothesis to prove the fact 'how FDI caused to effect the economic growth of developing countries'. For this, they observed the movement of FDI to LDC's especially in primary sector activities that ultimately exported to developed country at less price. This study clearly reveals the adverse impression for recipient countries economic status (Rodan 1961). The entrance of FDI boosts the domestic growth in short-run. However, in long-run the less growth rate has measured caused to dependency and de-capitalization such cause generally motivate the investor to repatriate this investment in long-run (Chenery and Strout 1966 and Bornschier 1980).

### **2.2. Post 1991**

During post liberalization, the policies have reshuffled, the restrictions over international trade also abolished that all proactive government steps led to encourage the FDI inflows in India. In this sequence, the figure shows during 80's decade, about 23% share contributed by MNE's in Indian assets and sale of organized private sector, in manufacturing industries the maximum 98% in leather industries to lowest share 7% in textile industries. Particularly, in leather, pharma, cigarette, automotive component the contribution widely distributed similarly, electric industries such as electric lamp, electric machinery, paint and varnish the share range from 34 to 66%, The recent studies stated the MNE's have controlled over third and a quarter over Indian manufacturing sector. Bajpai and Sachs (2000) suggested the policy makers to liberalize the framework to obtain the massive FDI inflow with wide opportunities. Chakraborty and Basu (2002)

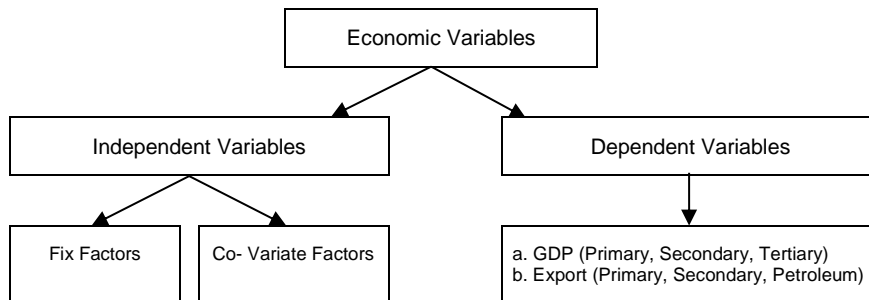
have defined the linkage between FDI and economic growth using a structural co-integration model and VECM for a database from 1974 to 1996. They advocated; in long-run FDI does contribute largely in growth prospect particularly the GDP and openness to trade, while in short-run the significance is unaffected (Dua and Rashid 1998). Agrawal (2005) estimated a fix model effect to measure the influence of FDI over five topmost Asian countries during 1965–1996. He focused highly over Indian economy, which was economic stable in south Asia and presented the evidence that FDI does not support to GDP i.e. it produce the negative effect, however the export is a progressive variable that shows the progression in long-run. Thus he concluded, the advancement in export is more supportive than GDP growth for economic aspect of India. The similar implication in Pradhan (2002), he estimated the economic growth of India is lower due to entrance of subsequent FDI inflow during 1969–1991. Salman and Feng (2010) and Javed et. al. (2012) studied the consequence of technology, managerial skills, capital transfer and employment generation on relevance of host country that are generally benefitted by all routes of FDI. After all discussing the different author's views about role FDI in India, the results says the economy does effect by entrance of FDI but the size and type of actual inflows contingent to significant determinants available in Indian economy.

### 3. METHODOLOGICAL FRAMEWORK

In the light of above discussion over the time of period, this paper is prepared to frame some constructive policies in the area of FDI inflow where the quantum of funds come but failed to present any specific qualitative results to the economy every year means might be country get exploited. Within this framework, the purpose is to search the effective economic parameters that could provoke the structure of FDI inflows in India. The relevant facts about the Indian economy are compiled from secondary sources such as UNCTAD, (online data base), RBI annual issues, World bank economic indicators, Annual economic survey and other relevant sources. Moreover, to present the empirical results, the GLM (Generalized Linear Model) has prepared in association of developing multiple Pearson correlation matrix. This technique is basically used when the presence of available dependent and independent variables are large in numbers. In this sequence, firstly the strength of relationship among variables at 5% or 1% significant level have estimated by formulating the correlation table. The results of R would support not only to present the connection between FDI and dependent parameters but how much the intra variables are correlated with each other. On the other hand to estimate the overall effect of FDI over economic variables multivariate test used. This model is basically designed to prefix the FDI as co-variate factor, Year, country as fixed factors and as export promotion, GDP formed as dependent variables. On contrary, to estimate the individual effect of each dependent variable within every independent variable, the tool uni-variate analysis is used.

### 3.1. Generalized Linear Model

This model is basically used when the data carries association of more than two variables in case of independent variables.



**Figure 2.** The basic Structure of GLM model

In this model the four statistical tests need to calculate.

- Pillai's Trace: The increasing positive values contribute more to the model.
- Wilks' Lambda: It fluctuate between 0 to 1 classes, within this range less value proves the effectiveness of model.
- Hotelling's Trace: The increasing positive values produce more effect to the model. The values of Pillai's trace always remains less than Hotelling's trace.
- Roy's Largest Root: The increasing positive values contribute more to the model. Roy's largest root is always less than or equal to Hotelling's trace.

## 4. EMPIRICAL RESULTS AND DISCUSSION

In this section, the several empirical tools have been used to estimate the effect of FDI inflows over economic parameters. The sequence of effect estimation techniques have presented below in tabular form.

### 4.1. Pearson Correlation

The Pearson correlation test is used to measure the strength of relationship between dependent and independent variables. Table 1 demonstrates the results of correlation in the presence of time series data from 2001 to 2012 based at 1% level of significance.

**Table 1.** Strength of correlation between dependent and independent variables in India from year 2000 to 2012

	FDI	Agriculture	Manu- facturing	Petroleum	Primary	Secondary	Ter- tiary
FDI	r 1						
Agriculture	r .925**	1					
Manufacturing	r .927**	.985**	1				
Petroleum	r .930**	.995**	.990**	1			
Primary	r .908**	.968**	.987**	.982**	1		
Secondary	r .935**	.977**	.992**	.984**	.994**	1	
Tertiary	r .910**	.973**	.989**	.982**	.999**	.996**	1

Source: UNCTAD, World Investment Report 2012.

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

These results support to produce a systematic evaluation approach of data i.e. intra variable relation approach and inter variable relation approach.

#### 4.1.1. Inter relationship: (FDI to dependent variables)

Variables	Value of r
FDI to Export in Agriculture sector	.925**
FDI to Export in Manufacturing	.927**
FDI to GDP in Secondary sector	.935**
FDI to GDP in Primary sector	.908**
FDI to GDP in Tertiary sector	.910**
FDI to Export in Petroleum product	.930**

#### 4.1.2. Intra relationship: (Between dependent Variables)

From the results, it is also evident that relationship between the other variables

- Export in Agriculture sector and Export in Manufacturing sector has been found to be Positive with strong correlation, value of coefficient  $r = .985^{**}$
- Export in Agriculture sector and GDP in Petroleum sector has been found to be Positive with strong correlation, value of correlation coefficient  $r = .995^{**}$
- Export in Agriculture sector and GDP in Primary sector has been found to be Positive with strong correlation, value of correlation coefficient  $r = .968^{**}$
- Export in Agriculture sector and GDP in Secondary sector has been found to be Positive with strong correlation, value of correlation coefficient  $r = .977^{**}$
- Export in Agriculture sector and GDP in Tertiary sector has been found to be Positive with strong correlation, value of correlation coefficient  $r = .973^{**}$
- Export in Manufacturing sector and GDP in Petroleum sector has been found to be Positive with strong correlation, value of correlation coefficient  $r = .990^{**}$
- GDP in Primary sector and GDP in Tertiary sector has been found to be Positive with strong correlation, value of correlation coefficient  $r = .999^{**}$
- GDP in Secondary sector and GDP in Tertiary sector has been found to be Positive with strong correlation, value of correlation coefficient  $r = .996^{**}$



- Export in Agriculture sector and GDP in Tertiary sector has been found to be Positive with strong correlation, value of correlation coefficient  $r = .973^{**}$

Since the correlation is positive, therefore we can conclude that Export and GDP are dependent on FDI inflow in India during interval 2001 to 2012.

#### 4.2. Multivariate statics

Table 2, represents the overall effect of FDI over pre-defined fixed or co-variate factors, which is derived by analysis of multi-variate estimation technique i.e. generalized linear model.

**Table 2.** Measurement of trends of overall effect i.e. country specific, year specific and FDI itself using Multi-variate analysis test in India

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	0.986	34.280b	6	3	0.007	0.986
	Wilks' Lambda	0.014	34.280b	6	3	0.007	0.986
	Hotelling's Trace	68.56	34.280b	6	3	0.007	0.986
	Roy's Largest Root	68.56	34.280b	6	3	0.007	0.986
FDI	Pillai's Trace	0.618	.809b	6	3	0.624	0.618
	Wilks' Lambda	0.382	.809b	6	3	0.624	0.618
	Hotelling's Trace	1.618	.809b	6	3	0.624	0.618
	Roy's Largest Root	1.618	.809b	6	3	0.624	0.618
Country	Pillai's Trace	0.82	2.273b	6	3	0.267	0.82
	Wilks' Lambda	0.18	2.273b	6	3	0.267	0.82
	Hotelling's Trace	4.547	2.273b	6	3	0.267	0.82
	Roy's Largest Root	4.547	2.273b	6	3	0.267	0.82
Year	Pillai's Trace	0.986	34.441b	6	3	0.007	0.986
	Wilks' Lambda	0.014	34.441b	6	3	0.007	0.986
	Hotelling's Trace	68.881	34.441b	6	3	0.007	0.986
	Roy's Largest Root	68.881	34.441b	6	3	0.007	0.986

Source: UNCTAD, World Investment Report 2012.

Notes. a. Design: Intercept + FDI + Country + Year; b. Exact statistic

The results demonstrate the exact statics for co-variate factor year is high and significance level of factor year is 0.007 in all associated tests that proves in India year is one of significant factor for drawing maximum FDI inflow. In addition, Partial eta squared also calculated to identify the variations in dependent variables which is associated with groups of independent variables. The figures shows the minimum value is 0.618 as in case of covariate factor FDI and maximum value 0.986 as in case of covariate factor year that reveals the country wise overall effect is less and effect for year wise is high. On the other hand, as expected, the Hotelling trace value always remain high than Pillai trace value and Roy largest root remain equal with Hotelling trace value, therefore Pillai trace value (0.986) and Hotelling trace value (68.881) that are in case of factor Year which further proves the year is only one robust factor that dominantly support in large FDI inflow in India.

### 4.3. Uni-variate analysis

Table 3 exhibits uni-variate tests between FDI, GDI and Export of India from 2001 to 2012. Before moving to this uni-variate analysis, correlation and MANOVA tests have been performed. According to the Pearson correlation, FDI seems to have strong positive relationship with both GDP and Export and MANOVA tests produced, the overall effect is year specific i.e. year is only significant factor that always attract the largest FDI inflow in India during recent decade.

**Table 3.** Measurement of suitable dependent variable to influence the domestic economy using Uni-variate analysis test

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	Agri	1463050575.720 <sup>a</sup>	3.00	487683525.20	33.88	0.00	0.93
	Manuf.	26067385074.579 <sup>b</sup>	3.00	8689128358.00	57.08	0.00	0.96
	Petrol.	3160774294.666 <sup>c</sup>	3.00	1053591432.00	34.21	0.00	0.93
	Primary	157647332853188.100 <sup>d</sup>	3.00	52549100000000.00	37.14	0.00	0.93
	Secondary	301174921327486.400 <sup>e</sup>	3.00	10039200000000.00	95.64	0.00	0.97
	Tertiary	1457171317227903.800 <sup>f</sup>	3.00	48572400000000.00	42.68	0.00	0.94
Intercept	Agri	105672065.50	1.00	105672065.50	7.34	0.03	0.48
	Manuf.	2502003562.00	1.00	2502003562.00	16.44	0.00	0.67
	Petrol.	212742186.50	1.00	212742186.50	6.91	0.03	0.46
	Primary	17954600000000.00	1.00	17954600000000.00	12.69	0.01	0.61
	Secondary	28948200000000.00	1.00	28948200000000.00	27.58	0.00	0.78
	Tertiary	16592800000000.00	1.00	16592800000000.00	14.58	0.01	0.65
FDI inflow	Agri	5407665.13	1.00	5407665.13	0.38	0.56	0.05
	Manuf.	8572051.34	1.00	8572051.34	0.06	0.82	0.01
	Petrol.	17824417.74	1.00	17824417.74	0.58	0.47	0.07
	Primary	14300271272.00	1.00	14300271272.00	0.01	0.92	0.00
	Secondary	90061756298.00	1.00	90061756298.00	0.09	0.78	0.01
	Tertiary	191355000000.00	1.00	191355000000.00	0.02	0.90	0.00
Country	Agri	13765806.25	1.00	13765806.25	0.96	0.36	0.11
	Manuf.	378816786.50	1.00	378816786.50	2.49	0.15	0.24
	Petrol.	46335308.12	1.00	46335308.12	1.50	0.26	0.16
	Primary	3460650000000.00	1.00	3460650000000.00	2.45	0.16	0.23
	Secondary	4165720000000.00	1.00	4165720000000.00	3.97	0.08	0.33
	Tertiary	5900645.50	1.00	105900645.50	7.35	0.03	0.48
Year	Agri	2507501655.00	1.00	2507501655.00	16.47	0.00	0.67
	Manuf.	212696999.90	1.00	212696999.90	6.91	0.03	0.46
	Petrol.	18026600000000.00	1.00	18026600000000.00	12.74	0.01	0.61
	Secondary	29033200000000.00	1.00	29033200000000.00	27.66	0.00	0.78
	Tertiary	166361000000000.00	1.00	166361000000000.00	14.62	0.01	0.65
	Agri	115157689.30	8.00	14394711.16			
Error	Manuf.	1217875776.00	8.00	152234472.00			
	Petrol.	246402880.10	8.00	30800360.01			
	Agri	6400870952.00	8.00				
	Manuf	120809000000.00	12.00				
	Petroleum	7777943718.00	12.00				
	Primary	115533000000000.00	12.00				
Total	Secondary	165798000000000.00	12.00				
	Tertiary	782761000000000.00	12.00				
	Agri	1578208265.00	11.00				
	Manuf.	27285260851.00	11.00				
	Petrol.	3407177175.00	11.00				
	Primary	168965000000000.00	11.00				
Corrected Total	Secondary	309573000000000.00	11.00				
	Tertiary	154821000000000.00	11.00				

Source: UNCTAD, World Investment Report 2012.

Notes: a. R Squared = .927 (Adjusted R Squared = .900); b. R Squared = .955 (Adjusted R Squared = .939); c. R Squared = .928 (Adjusted R Squared = .901); d. R Squared = .933 (Adjusted R Squared = .908); e. R Squared = .973 (Adjusted R Squared = .963); f. R Squared = .941 (Adjusted R Squared = .919)

Uni-variate tests have been applied to measure the interaction among fixed and co-variate factors (FDI, Country and Year) in order to identify the most influensive parameters (GDP and Export in categories) based on the overall effect found in MANOVA analysis. The results displays, the dependent variable Export in

Manufacturing sig. value is .004, agriculture sig. value is .027 and GDP in Primary sector sig. value is .007, Secondary sector sig. value is .001 and tertiary sector sig. value is .005. On the other hand, the large eta value for GDP (secondary sector) .776, Export (Manufacturing sector) .673. This indicates that the entrance of FDI in India tends to increase the GDP in Primary, Secondary and tertiary sectors and export in Agriculture and manufacturing sector in many folds. The Regression displays the indication about the deviation accounted by our model. R Square values, the coefficient of determination, are the squared value of the multiple correlation coefficients. R Squared statics for Export in Agriculture (92.7%), Export in manufacturing (95.5%), Export in petroleum (92.8%) GDP in primary (93.3%), GDP in secondary (97.3%), GDP in Tertiary (94.1%) is explained by the model.

## CONCLUSION

The information collected for this research specifically displays, India has received maximum share of FDI inflow during 2003–2007. The foremost reasons associated for such remarkable inflows are allowance 100% FDI through Automatic route, enactment of SEZ Act 2005, and radical improvements in standard of infrastructural facilities in order to attract the large FDI inflows in Indian economy. In spite of all amenities, the country's FDI graph started to fall during couple of years caused to Global economic sub-prime crisis in USA. However, India was least effected country. Over the study period, Mauritius remained a single investor country that has contributed highest 37% of cumulative FDI Inflow in India. However, FDI comes in every sector of India but services sector receives maximum FDI because of low cost labour force. The study primarily looks into details of economic parameters, how they attribute to the scale of FDI inflows in India over a period of 2001–2012. Beginning with Pearson correlation, the FDI inflows incorporates several economic parameters categories in order to broaden the scope of FDI inflows. In addition to this, GLM i.e. generalized linear model is also proposed as an effective analytical tool. The final analysis shows that the multi-variate analysis represents only year is one robust factor to bring the massive FDI inflows in India over the period of study. Moreover, the entrance of FDI supports to increase the scale of GDP in secondary and tertiary sectors whereas the export in manufacturing sector in many folds.

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