FDI in Health Sector during COVID-19 in India: A Regression Analysis

Sushanta Kumar Tarai

PhD. Research Scholar, Department of Economics, Berhampur University, Odisha, India

susant86.trii@gmail.com

7978119848

Abstract

One of the most notable features of economic globalization has been the increased importance of Foreign Direct Investment around the World. FDI has the potential to generate employment, raise productivity, enhancing competitiveness of the domestic economy through transfer of skills and technology, enhance exports and contribute to the long-term economic development of the nations. FDI in health care sector has gathered momentum in the recent years. Since January 2000, FDI is permitted up to 100 per cent under the automatic route in hospitals in India. FDI is allowed across the industries and sectors, has proven that foreign investors have faith in the resilience of Indian markets. FDI and GDP are positively correlated with each other and the country's GDP is showing a positive movement with flow of Foreign Direct Investment in India. The flow of FII and FDI also shows the positive correlation with each other.

***Key Words**: Competitiveness, COVID-19, FDI, Health Sector, and Regression.*

1. INTRODUCTION

The trend in India's Foreign Direct Investment, after the economic reforms, was assessed to analyze the impact of IFDI on the economic growth of the country in terms of GDP. Foreign direct investment has been an important element of India's economic development process. Economic reforms taken by the Indian government in 1991 makes the country one of the prominent performers of global economies by placing the country as the 4th largest and the 2nd fastest growing economy in the world. India also ranks as the 11th largest economy in terms of industrial output and has the 3rd largest pool of scientific and technical manpower. Continued economic liberalization since 1991 and its overall direction remained the same over the years irrespective of the ruling party moved the economy towards a market–based system from a closed economy characterized by extensive regulation, protectionism, public ownership which leads to pervasive corruption and slow growth from the 1950s until 1990s.

Foreign investors play significant role in the development of the hospital sector. In recent years, there is growing interest among foreign players to enter India‟s health care sector through capital investments, technology tie –ups, and collaborative ventures across various segments including diagnostics, medical equipment, hospitals, education and training. India‟s foreign investment policy is liberal for hospitals. Since January 2000, FDI is permitted up to 100% under the automatic route for the hospitals sector in India. Approval from the Foreign Investment Promotion Board (FIPB) is required only for foreign investors with prior technical collaboration, but allowed up to 100%. This is evident from the fact that private equity funds have invested over $2 billion in health care and life sciences sector over the past five years. Further, India has received USD 1, 32,837 million as aggregate FDI from April, 2011 and specifically hospital and diagnostic centres have received FDI of USD 1030.05 million from April 2000 up to April 2011 constituting 0.78 % of the total FDI in to India. In order to understand the extent and nature of Foreign Direct Investment in hospitals, a list of all FDI approved projects in hospitals and diagnostic centres during the January 2000 to July 2006 periods was obtained from the Department of Industrial Policy and Promotion. This list consisted of 90 projects, for a total approved FDI amount of $53 million, and covering a wide range of countries, such as Australia, Canada, UK, US, UAE, Malaysia, Singapore etc.

2. COUNTRY-WISE CONTRIBUTIONS OF FDI INFLOWS IN INDIA

The country-wise inflows in FDI in India have been shown in the table-3.1 covering the period between 2007 and 2017. However, for most countries, the FDI inflows have increased over time.

In the year 2017, Mauritius contributed maximum FDI inflows in India followed by Singapore whereas the minimum FDI inflows in India were from Luxembourg. However, throughout the analysis, the main contributors of FDI inflows were Mauritius, Singapore, USA, Japan, Netherlands & UK. However, the inflows fell in percentage for Mauritius over the period. Mauritius and Germany accounted for a negative percentage change in FDI inflows in India. 2011 is the year of maximum FDI inflows in India. Again, Mauritius is the biggest contributor to it followed by Singapore. The total FDI inflows also increased at a rate of 20% throughout the period. India experienced the highest percentage change in FDI inflows from Spain. Inflows from the USA experienced the lowest percentage change among all the countries.

In the pie chart that is figure-1, it has been depicted that the percentage of total FDI comes

from Mauritius is the highest among all those countries is 25% followed by the countries like Singapore, USA 7% and 2 % respectively, which is so significant for India.

The total FDI inflow in India from 2000 to June-2018 is US$ 545,463 and the total investment by FII is US$ 216,475 million. The FDI in India has shown good growth after 2004 which is depicted in table-2.

Karl Pearson's coefficient correlation for total FDI in India and Investment by FIIs in India for the period 2001 to 2018 for the data given in table 3.3 is 0.40. This analysis is showing that the two variables have a weak positive correlation between them. But it is quite evident from the data that an increase in FDI in India is leading to an increase in investments by FII because of its positive effect on the economic development of a country.

In figure-2, the trend analysis of the FDI data from 2001 to 2018 shows that there is always a positive average trend of FDI in India but FDI flow in India has increased in recent years only starting from 2013 to 2018. The Indian economy has started attracting a good amount of FDI after 2013. Before 2013 the FDI flow was fluctuating, which was just a stagnant trend for FDI. From the above data, we can analyze that during the period of the current global financial crisis, there was a significant decrease in the flow of FDI in most of the countries in 2008-2010 but this decline of FDI in India was relatively moderate reflecting robust equity flows on the back of a strong rebound in domestic growth ahead of Global recovery and steady reinvested earnings reflecting better profitability of foreign companies in India.

3. SECTOR-WISE ALLOCATION OF FDI INFLOW

The Sector-wise allocation of FDI inflow shows a clear picture of the direction of FDI in India. Among the various sectors, the service sector is attracting maximum funds of 18% of total FDI amounting to 189,991 crores followed by construction and development with an 11% share amounting to Rs. 110,234 crore.

In table-4, the other sectors like Computer Software & Hardware, telecommunication, construction, automobile industry and trading are also attracting a good share of FDI in India. As for as the service sector is concerned according to the Economic Survey of India, India has the second-fastest-growing services sector in the world with a compound annual growth rate at 9 per cent, just below China's 10.9 per cent, from 2001 to 2012. Among the world's top 15 countries in terms of GDP, India ranked 10th in terms of overall GDP and 12th in terms of services GDP in 2012. Thus, this reason can be attributable to the highest share of FDI to the Service sector as India

has the second-fastest-growing services sector with a CAGR at 9 per cent, just below China's 10.9 per cent, during the last 11-year period from 2001 to2012. They believe India will be increasingly recognized as a favoured FDI destination if growth is accompanied by continued structural reforms," UBS said in a research note. This is a great leap forward.

Summary statistics of FDI in different sectors which are in table-5 depicts that the average FDI is Rs.135081 crores and the standard deviation is Rs.87323 Crores. It implies that there is a high disparity among the sectors in FDI inflow.

Figure-3 displays FDI in different sectors in India and it is visible in the figure that in the services sector, the allocation of FDI is highest than the other sectors and it is followed by computer software and hardware.

4. INFLOW OF FOREIGN DIRECT INVESTMENT AND GROSS DOMESTIC PRODUCT (GDP)

Foreign Direct Investment and Gross domestic product are the major determinants of the economy of any country. FDI affects the GDP of a country directly and hence they are positively correlated. But the FDI in a country is not the only economic factor on which causes the GDP to increase or decrease there are so many quantitative and qualitative economic and non-economic variables that influence the GDP of a country. Gross Domestic Product refers to the market value of all final goods and services produced within a country in a given period. It is often considered an indicator of growth and standard of living for a country. Foreign Direct Investment has a close relationship with Gross Domestic Product (GDP) in India. The year-wise FDI inflows along with GDPs secured by India are seen in Table-3.6.

Table-6 exhibits the FDI inflows and the Gross Domestic Product (GDP) achieved by the country. The FDI inflows have increased from US $ 34298.01 million in 2013 to the US $ 60974.29 million in 2018. During the study period, the percentage of growth over the previous year lies between 6.39% and 6.62% in 2017. During the study period, the percentage of growth over the previous year lies between 6.4 % and 7.5 %. The highest growth rate has been observed (10.3%) in 2010 and the lowest growth rate has been observed (1.1%) in the year 1991

5. CAUSALITY BETWEEN FDI INFLOW AND GROSS DOMESTIC PRODUCT (GDP)

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Correlation analysis was carried out to find out the relationship between the variables Foreign Direct Investment and Gross Domestic Product.

Table-7 exhibits the relationship between Foreign Direct Investment and Gross Domestic Product of India from 2000 to 2018. The correlation coefficient is 0.88 which is significant at 0.01 levels. It indicates that there is a strong positive relation between FDI inflows and GDP.

5.1 Granger Causality

The causal nexus between FDI and economic growth, in India, is analysed using the Granger causality test (Grangers 1969). Granger causality test assumes that data series are stationary. To verify the stationary properties of FDI and GDP, the standard unit roots test is like the augmented Dickey-Fuller (ADF) test. Annual data for FDI and GDP (a proxy for economic growth) from 1991 to 2018 is used to check the causality. The necessary data were collected from the Reserve Bank of India and DIPP.

Table- reveals ADF test results for FDI and GDP in India. The results reveal that the ADF test accepts the null hypothesis of a unit root in its level. When the ADF statistics are extended to the first differenced variables, it can be observed that the null hypothesis is rejected for FDI and is accepted for GDP (for few countries, while for few other countries the variables are stationary at first difference itself). Hence the ADF statistics is further extended to second differenced variables. It is observed that the null hypothesis is rejected for GDP. Hence, the selected variables, FDI and GDP are stationary at the second difference.

The Granger (1969) test for causality between two variables is employed for this study. The test indicates that, for two time-series variables X_t, and Y_t, if X improves the prediction of Y, then X (Granger) causes Y. The estimating equations can be written simply as follows.

$$\mathbf{GDP_t} = \sum \boldsymbol{\alpha 1 iGDPt} - \mathbf{i} + \sum \boldsymbol{\beta 1 iFDIt} - \boldsymbol{i} + \sum \boldsymbol{\alpha 2 iFERt} - \boldsymbol{i} + \sum \boldsymbol{\beta 2 INFt} - \boldsymbol{i} + + \boldsymbol{ut}$$

Where GDP and FDI_t are stationary time series, u_t and v_t are white noise error terms and *i* and *j* are the maximum lag length used in each time series.

6. DISCUSSIONS

The Flow of FDI in India is showing a positive trend and is a very positive signal for the Indian Economy. The Indian Economy is one of the most favourable investment destinations for most of the developed and developing countries. The Inflow of FDI and FII in India has positive relationship between each other. The FDI is significantly contributing to the economic development of India as it has a positive correlation coefficient of 0.6 with Indian GDP. The service sector of India is the second-fastest-growing services sector with a CAGR at 9 per cent, just below China's 10.9 per cent, during the last 11-year period from 2001 to 2012 and that Is why the Indian service sector shares the maximum share of the total FDI In India.

The FDI trend in the Indian Economy is moving in an upward direction that too with the good speed. Based on the above analysis it is quite evident to say that the Indian economy is one of the most promising investment destination for most of the developed and developing nations. And we should grab this opportunity by liberalising the rule and regulations for FDI in India. But one question that is striking my mind is that despite having a good inflow of FDI in India just after the recession period. Why we are not able to attract more FDI. As the growth rate of FDI in India for the period of 2010 to 2014 is not much attractive. So we need to find some factors that are causing the slowdown of FDI inflow in the Indian Economy.

7. DECLARATIONS

I, hereby, declare that the current research paper has neither been funded by any government or non-government organization nor been published earlier in any journal or book.

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Appendices

Table-1 Country-Wise Contributions of FDI Inflows in India (In US million dollars)

Countries	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Mauritius	9518	10165	9801	5616	8142	8,059	3,695	5,878	7,452	13,382	13,415
Singapore	2827	3360	2218	1540	3306	1,605	4,415	5,137	12,479	6,529	9,273
USA	950	1236	2212	1071	994	478	617	1,981	4,124	2,138	1,973
Cyprus	570	1211	1623	571	1568	415	546	737	488	282	290
Japan	457	266	971	1256	2089	1,340	1,795	2,019	1,818	4,237	1,313
Netherland	601	682	804	1417	1289	1,700	1,157	2,154	2,330	3,234	2,677
UK	508	690	643	538	2760	1,022	111	1,891	842	1,301	716

Germany	486	611	602	163	368	467	650	942	927	845	1,095
UAE	226	234	373	188	346	173	239	327	961	645	408
France	136	437	283	486	589	547	229	347	392	487	403
Switzerlan	192	135	96	133	211	268	356	292	195	502	506
Spain	48	363	125	183	251	348	181	401	141	213	NA
South	86	95	159	136	226	224	189	138	241	466	293
Other	2699	3034	2374	1184	989	1,394	1,501	1,754	2,677	1,109	1,889
Total	1930	2251	2228	1448	2312	18,04	15,68	23,99	35,06	35,37	3425

Source- RBI database

2. TREND AND GROWTH OF FDI INFLOW AND INVESTMENT BY FII IN INDIA

Table-2 FDI inflow and Investment by FII in India

Year	Total FDI (US $ Million)	%age growth over the previous year (in US$ terms)	Investment by FII (US $ Million)
2000-01	4029	------	1847
2001-02	6130	52%	1505
2002-03	5035	(-)18%	377
2003-04	4322	(-)14%	10918
2004-05	6051	40%	8686
2005-06	8961	48%	9926
2006-07	22826	155%	3225
2007-08	34843	53%	20328
2008-09	41873	20%	(-)15017
2009-10	37745	(-)10%	29048
2010-11	34847	(-)8%	29422
2011-12	46556	34%	16812
2012-13	34298	(-)26%	27582
2013-14	36046	5%	5009
2014-15	45148	25%	40923
2015-16	55559	23%	(-)4016
2016-17	60220	8%	7735
2017-18	60974	3%	22165
Total	545,463	-	216,475

Source: Department of industrial policy and Promotion (Govt. of India)

Table-3 Correlation Matrix

	Total FDI (US $ Million)	Investment by FII (US $ Million)
Total FDI (US $ Million	1	
Investment by FII (US $ Million)	0.40	1

Source-Computed by author

Table-4 Sectors Attracting Highest FDI in India (Amount in Crore)

S.No	Sector	2000-2018	Percentage (%)
1	Services Sector	359,816.79	17.56
2	Computer Software & Hardware	176,458.83	8.18
3	Telecommunications	169,912.07	8.00
4	Construction Development: Townships, Housing, Built-Up Infrastructure and Construction-Development Projects	118,110.67	6.59
5	Automobile Industry	105,679.21	4.98
6	Trading	112,635.36	4.92
7	Drugs & Pharmaceuticals	82,322.34	4.17
8	Chemicals (Other Than Fertilizers)	77,377.30	3.87
9	Power	70,559.48	3.51
10	Construction (Infrastructure) Activities	77,945.83	3.33

Source: Department of industrial policy and Promotion (Govt. of India)

Table-5 Summary Statistics

	FDI	**FII**
Mean	135081.8	6.51
Standard Error	27614.09	1.35
Median	109157.3	4.95
Standard Deviation	87323.42	4.26
Kurtosis	5.43	5.70
Skewness	2.22	2.26
Range	289257.3	14.23
Minimum	70559.48	3.33
Maximum	359816.8	17.56

Source-Computed by author

Table-6 Year-wise Inflow of FDI and GDP (Inflation under 5%)

year	FDI in the US $ Million	GDP at MP US $ Billion	GDP growth rate	year	FDI in the US $ Million	GDP at MP	GDP growth rate
1991	97.00	1.06	1.1 %	2005	6051.00	9.28	9.3 %
1992	129.00	5.48	5.5 %	2006	9697.00	9.26	9.3 %
1993	315.00	4.75	4.8 %	2007	22826.00	9.80	9.8 %
1994	586.00	6.66	6.7 %	2008	34843.00	3.89	3.9 %
1995	1314.00	7.57	7.6 %	2009	41873.00	8.48	8.5 %
1996	2144.00	7.55	7.6 %	2010	37745.00	10.26	10.3 %

1997	2821.00	4.05	4.1 %	2011	34847.00	6.64	6.6 %
1998	3557.00	6.18	6.2 %	2012	46553.00	5.46	5.5 %
1999	2462.00	8.85	8.5 %	2013	34298.01	6.39	6.4 %
2000	2155.00	3.84	4.0 %	2014	36046.49	7.41	7.4 %
2001	4029.00	4.82	4.9 %	2015	45147.95	8.15	8.2 %
2002	4095.00	3.80	3.9 %	2016	55558.55	7.11	7.1 %
2003	2764.00	7.86	7.9 %	2017	60220.28	6.62	6.7 %
2004	2229.00	7.92	7.8 %	2018	60974.29	11.7	7.5 %
				total	555377.56	179.17	

Source: DIPP (GOI) and Reserve Bank of India.

Table-7 Correlations between FDI and GDP

		FDI	GDP
FDI	Pearson Correlation	1	0.88**
	Sig. (2-tailed)		.01
	N	16	16
GDP	Pearson Correlation	0.88**	1
	Sig. (2-tailed)	.01	
	N	16	16

Source – computed by the author.

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

Source-Computed by author

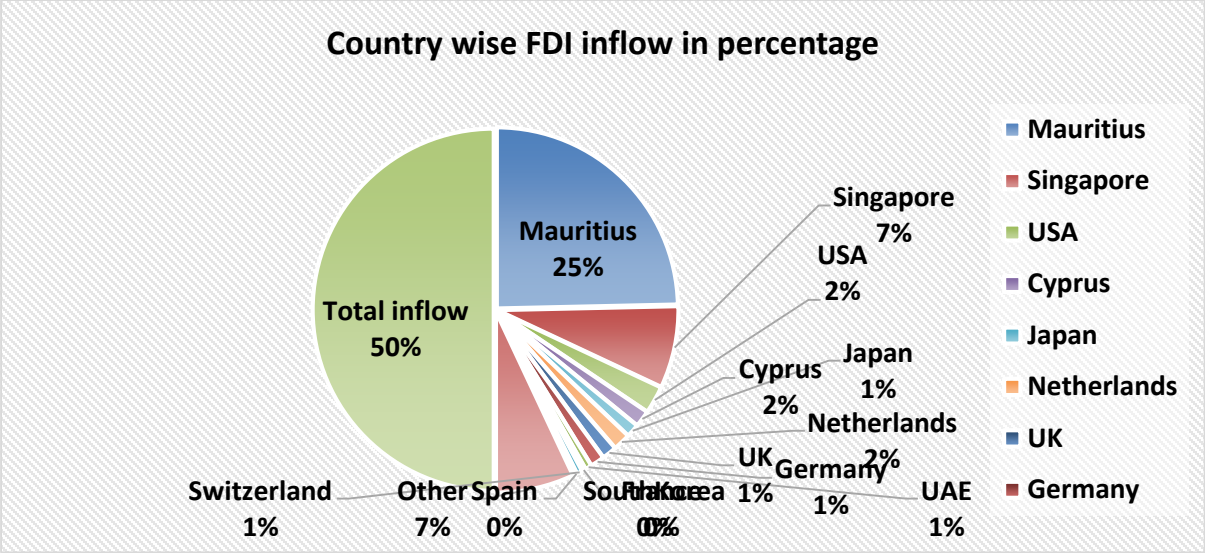
Table-8 Augmented Dickey-Fuller Test Results

	At logarithmic levels		First Difference		Second	
	FDI	GDP	FDI	GDP	FDI	GDP
With Intercept	-0.96 (0.74)	0.71 (0.97)	-3.70 (0.01) *	-2.70 (0.08) **	-5.61 (0.00) *	-5.76 (0.00)
With Intercept & Time Trend	-2.01 (0.55)	-2.76 (0.23)	-3.68 (0.06) **	-2.62 (0.25)	-5.48 (0.00) *	-5.59 (0.00) *
Without Intercept and	1.33 (0.95)	5.06 (1.0)	-3.57 (0.00)	-0.13 (0.62)	-5.94 (0.00)	-5.98 (0.00)

Source – computed by the author.

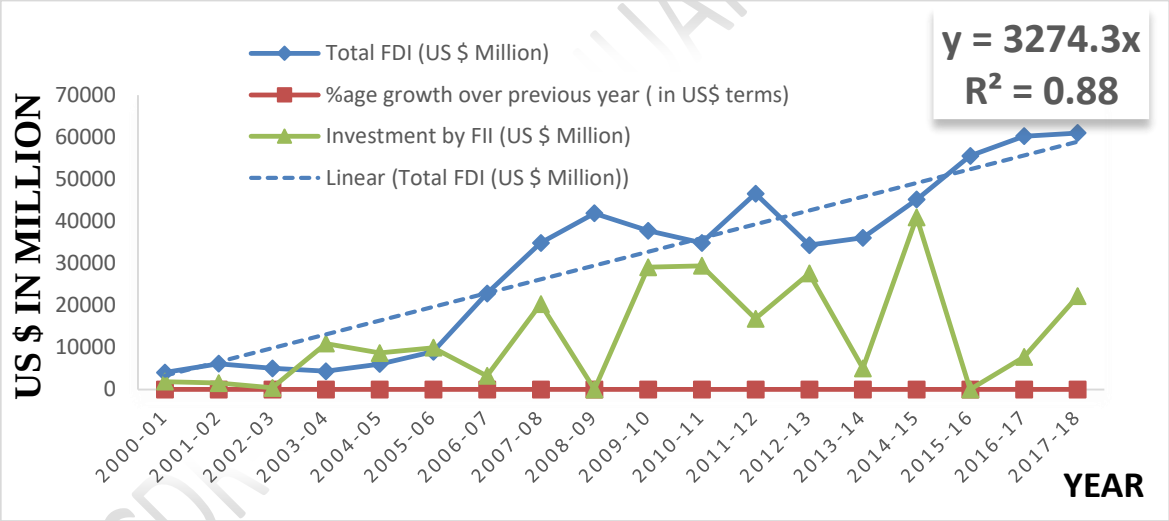
FIGURES

Figure-1 Country-Wise Contributions of FDI Inflows in India (In US million dollars)



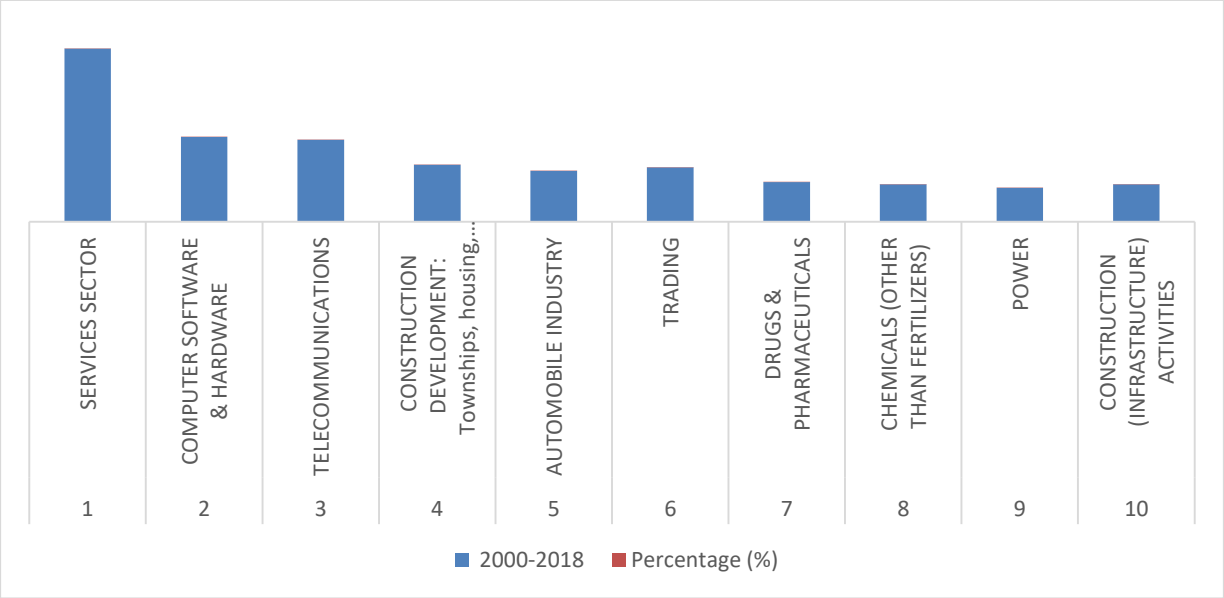
Source-Computed by author

Figure-2 Trend of Total FDI (US $ Million)



Source-Computed by author

Figure-3 FDI inflow to sectors (2000-2018)



Source-Computed by author