

IMPACT OF FOREIGN DIRECT INVESTMENT (FDI) ON THE ECONOMY OF THE COUNTRY- FORCASTING FDI'S IN INDIA

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Abstract

Foreign Direct Investment plays an important role in Economic Development of any country. Foreign Direct Investment is one of the major instruments of attracting International Economic Integration and development in any economy. It acts as a bridge between investment and saving. Many developing countries like India, are facing the deficit of savings. This problem can be tackled with the help of Foreign Direct Investment. Foreign investment helps in mitigating the defect of Balance of Payments. The flow of foreign investment is a profit making industry like insurance, real estate and business services and acting as a catalyst for the economic growth in India. This paper analyses FDI inflow in India during the Post Liberalization period. Moreover, the trends of FDI inflow into the country are projected for a period of four years from 2016-2020 using Moving Average Model (MA) forecasting technique and trend analysis. The paper examines the various factors which influence or affect the flow of FDI into the country and suggestive measures to increase the flow of FDI in India and juxtapose the results with that of other developing nations in the world.

Keywords: Foreign Direct Investment; FDI India; Pre & Post Liberalization Period ; Moving Average Model; Trend Analysis.

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1. Introduction

Foreign Direct Investment or FDI refers to controlling ownership in a business enterprise in one country by an entity which is based in some other country. FDI has had a great impact on the Indian Economy especially after the post liberalization period (1991 onwards).

FDI in India has played a great role in the development of the nation. FDI is considered to be vital for the growth of developing countries. Often, developing countries don't generate enough revenue or income to support their growing economy. FDI is therefore a key factor which provides the developing countries with the required resources to support their economy.

FDI inflow helps in a long term development of a developing country. It leads to transfer of technology, increases employment opportunities, strengthens infrastructure and also promotes healthy competition.

Ever since India liberalized their economy to the outside world after 1991, there has been a huge FDI inflow in the country, which has had a considerable impact on the Indian Economy. In this paper, we will be discussing FDI inflow in India during both Pre and well and Post Liberalization period and we will also predict the FDI inflow in India for a future period of five years (2017-2021) using Moving Average model and Trend analysis.

2. Objectives

- Study FDI inflow in India during the Pre-Liberalization period (before 1991)
- Study FDI inflow in India during Post- Liberalization period (1991 onwards)
- Using Moving Average Model and Trend Analysis to calculate the FDI inflow in India for a future period of 5 years (2016-2021)

3. Period of Study

The period of study taken into account for analyzing the FDI inflows during the Pre and Post Liberalization period is undertaken for a period of 36 years from 1980-81 to 2015-16. The factors that influence the flow of FDI into India is analyzed during the Post Liberalization period i.e., from 1991 to 2016.

4. Tools Used To Perform The Analysis

- Microsoft Excel
- Minitab

5. FDI Inflow during Pre Liberalization Period (1947-1991):

- Before 1991, the Indian government had made attempts to close the India economy to the outside world. This led to the Indian currency (Rupee) being inconvertible. The government imposed high taxes and tariffs on foreign goods. In order to demote the import of foreign goods in India, it was made mandatory for foreign companies and firms to possess a license from the government in order to invest in India. The India government denied outside companies to invest in India in order to protect the domestic companies and firms from stiff foreign competition. It was believed that if foreign companies would be allowed to invest and trade in India, the domestic companies would greatly suffer as majority of the domestic companies and business lacked the required technology and infrastructure to compete with the foreign firms.
- During the pre liberalization period, it was believed that India needed to rely on internal markets for development and not on international trade. This belief was generated from a mixture of socialism and from the experiences of colonial exploitation.
- The policy to restrict foreign direct investment and foreign exchange backfired on the Indian Government. The annual growth rate of India before 1980 was stagnated around 3.5 percent while the per capita income averaged around 1.3 percent. At the same time, other developing nations such as Pakistan, Indonesia and Thailand had higher growth rates (Pakistan's growth rate grew by 5%, Indonesia's growth rate grew by 9% and Thailand's growth rate grew by 9%).

The following table shows FDI inflow in India during pre- liberalization period:

Serial Number	Year	FDI Inflow (\$ Million)	Annual Growth Rate
1	1980-1981	8	-
2	1981-1982	10	25
3	1982-1983	60	500

4	1983-1984	60	0
5	1984-1985	60	0
6	1985-1986	160	166.67
7	1986-1987	196	22.50
8	1987-1988	190	-3.06
9	1988-1989	267	40.52
10	1989-1990	330	23.60
11	1990-1991	97	-70.60

Source: Department of Industrial Policy and Promotion (DIPP), FDI Statistics

- India had a fixed exchange system before 1991. India started having balance of payments problems since 1985 and by the start of 1990, India was in a serious economic crises. The balance of payments problem started pushing India towards bankruptcy.
- This low point in the India economy lead to removal of tariffs and globalization which we are witnessing today.

6. FDI Inflow during Post Liberalization Period

- 1991 onwards, steps were taken by the Indian government to liberalize and globalize the Indian economy.
- The changes made included reduction in import tariffs, deregulation of markets, increased foreign investment and reduction on taxes.
- It was due to liberalization of the Indian economy a high growth rate was recorded during late nineties (1995-1999).
- FDI inflow in India had been growing ever since the economy was liberalized in 1991.
- A large number of foreign companies and business firms have set up their businesses in India. Although FDI has its drawbacks, but increase in FDI inflow in India led to increase in the employment rate. FDI also helped in strengthening the infrastructure and technology in India, which had a positive Impact on the economy and led to increased growth rate.

The following table shows the FDI inflow in India 1991 onwards:

Serial Number	Year	FDI Inflow (In US \$, Million)	Annual Growth Rate
1	1991-1992	129	-
2	1992-1993	315	144.18
3	1993-1994	586	86.03
4	1994-1995	1314	55.40
5	1995-1996	2144	63.16
6	1996-1997	2821	31.57
7	1997-1998	3557	26.09
8	1998-1999	2462	-30.78
9	1999-2000	2155	-12.46
10	2000-2001	4029	86.96
11	2001-2002	6130	52.14
12	2002-2003	5035	-17.86
13	2003-2004	4322	-14.16
14	2004-2005	6051	40.04
15	2005-2006	8961	48.09

16	2006-2007	22826	154.72
17	2007-2008	34835	52.61
18	2008-2009	35180	0.99
19	2009-2010	37182	5.69
20	2010-2011	21007	-43.50
21	2011-2012	34621	64.80
22	2012-2013	22789	-34.17
23	2013-2014	22038	-3.29
24	2014-2015	22875	3.79
25	2015-2016	29908	30.74

Source: Department of Industrial Policy and Promotion (DIPP), FDI Statistics

7. Moving Average Method of Analysis

- Moving Average is a method to calculate and analyze data points by creating series of averages of different subsets of a full data set. It is also referred as Moving Mean Method.
- If we are given a series of numbers, the first element of the Moving Average (MA) is calculated by taking the average value of the initial subset of numbers present in the series. The next element is calculated by excluding the first number of the series and including the next number following the original subset in the series.
- This creates a new set of numbers, which is averaged. Hence the Moving Average Method can be used for time-series analysis of data. Moving Average is often used in technical

analysis of financial data, like stock values, returns or trading volumes. It can also be used in economics to calculate gross domestic product, employment or other time series.

The formula for calculating the Moving Average is given as follows:

$$M_{an} = \sum D_i / n$$

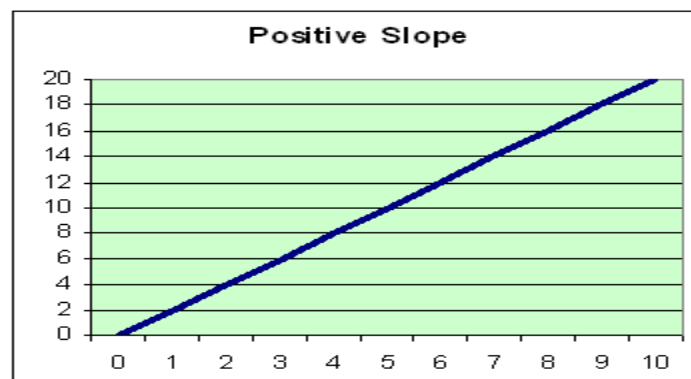
Where:

n= Number of periods in the moving average.

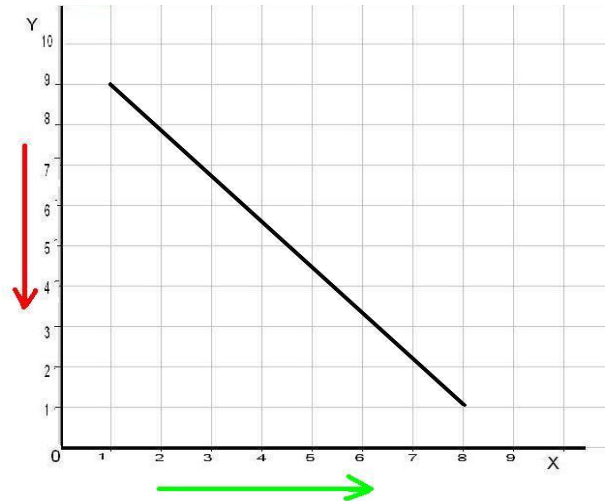
D_i = Value/ Demand during period i

8. Method of Trend Analysis:

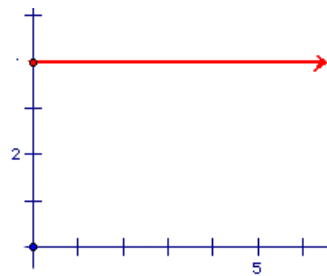
- A trend line is referred to as the line of best fit. It is used to represent the behavior of a set of data and to determine if the data follows a certain pattern. It is used for forecasting purposes in time-series model.
- A trend line typically shows three types of trends, namely positive trend, negative trend or it shows no trend at all. If we plot a graph of the data set, and we obtain a graph with an increasing slope, then it is referred to as a positive trend. The following graph shows a positive trend:



- If a negative slope is obtained, then its' referred to as a negative trend. The following graph shows an example of negative trend:



- If the slope of the graph plotted remains constant, then the data set shows no trend. The following graph is an example of no trend.



9. Calculating Trend Lines:

- In most cases, approximation is sufficient to obtain the general behavior of data. In order to calculate the trend line, we need to make use of the following set of formula:

$$\bar{Y} = m\bar{X} + b, \text{ where}$$

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n x_i \text{ (the average of } x)$$

$$\bar{Y} = \frac{1}{n} \sum_{i=1}^n y_i \text{ (the average of } y)$$

$$m = \frac{\sum_{i=1}^n (x_i - \bar{X})(y_i - \bar{Y})}{\sum_{i=1}^n (x_i - \bar{X})^2}$$

$$b = \bar{Y} - m\bar{X}$$

- In this paper, we will be using both the concepts of Trend Analysis and Moving Average Method for forecasting FDI Values for a future period of 6 years (2016-2021).
- Now for calculating the trend line, we have made a modification to obtain a better forecasting. After obtaining the first value using the trend analysis method, the second value is calculated by replacing the oldest value in the dataset by the new value which was previously calculated.
- The oldest value is replaced by the new calculated value because the oldest value is of lesser significance as compared to the new value which was calculated using trend analysis. Hence in this paper we have modified the Trend analysis method by incorporating Moving Average method in it:
- For forecasting the FDI inflow values, we have made use of the FDI inflow data from the financial year 1991-2015.
- We chose the FDI inflow data after the Post- Liberalization period to make the predictions as the FDI inflow during pre- liberalization period in India was very less as compared to the FDI inflow during post-liberalization period.

10. FY 2016-2017 FDI Inflow Forecast:

Now consider the following set of data:

Now, we have Y' (Average of y_i) = 10459.63

X' (Average of x_i) = 12.5

Year	y_i (FDI inflow in US \$ Millions)	x_i (Period)	$(x_i - X')$	$(y_i - Y')$	$(x_i - X')(y_i - Y')$	$(x_i - X')^2$
1992-1993	315	1	-11.5	-9873.63	116663.2	132.25
1993-1994	586	2	-10.5	-9145.63	103673.1	110.25
1994-1995	1314	3	-9.5	-8688.34	86883.49	90.25

1995-1996	2144	4	-8.5	-8315.63	70682.86	72.25
1996-1997	2821	5	-7.5	-7638.63	57289.73	56.25
1997-1998	3557	6	-6.5	-6902.63	44867.1	42.25
1998-1999	2462	7	-5.5	-7797.63	42886.97	30.25
1999-2000	2155	8	-4.5	-8304.63	37370.84	20.25
2000-2001	2428	9	-3.5	-8031.63	28110.71	12.25
2001-2002	3571	10	-2.5	-6888.63	17221.58	6.25
2002-2003	3361	11	-1.5	-7098.63	10647.95	2.25
2003-2004	2079	12	-0.5	-8380.63	4190.315	0.25
2004-2005	3213	13	0.5	-7246.63	-3623.32	0.25
2005-2006	4355	14	1.5	-6104.63	-9156.95	2.25
2006-2007	11119	15	2.5	659.37	1648.425	6.25
2007-2008	15921	16	3.5	5461.37	19114.8	12.25
2008-2009	37094	17	4.5	26634.37	119854.7	20.25
2009-2010	27044	18	5.5	16584.37	91214.04	30.25

2010-2011	21007	19	6.5	10547.37	68557.91	42.25
2011-2012	34621	20	7.5	24161.37	181210.27	56.25
2012-2013	22789	21	8.5	12329.37	104799.6	72.25
2013-2014	22038	22	9.5	11578.37	109994.5	90.25
2014-2015	28875	23	10.5	18415.37	193361.4	110.25
2015-2016	29908	24	11.5	19448.37	223656.3	132.25

Now, from the above given formula we find out :

$$m = 1721120/1150 = 1496.62$$

$$b = \text{Average of } y \text{ intercept} = 10459.63$$

Now we know that $y = mx + b$

- For the financial year 2016-2017, the period will be taken to be 25.

Hence, we have:

$$Y_{25} = (1496.62 * 25) + 10459.63 = 47875.282$$

Hence for Financial Year 2016-2017, the FDI inflow is predicted to be \$47875.282 Million.

11. FY 2017-2018 FDI Inflow Forecast:

- Now to calculate the FDI inflow for the Financial Year 2017-2018, we will replace the FDI inflow for the year 1992-1993 by the FDI inflow for the financial year 2016-2017.

- Hence we have the following set of values:

$$\text{Now } X' \text{ (Average value of } x_i) = 13.5$$

$$\text{Now } Y' \text{ (Average value of } y_i) = 12212.05$$

Year	y_i (FDI inflow in	x_i (Period)	$(x_i - X')$	$(y_i - Y')$	$(x_i - X')(y_i - Y')$	$(x_i - X')^2$
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	US \$ Millions)					
1993- 1994	586	2	-11.5	- 11626.0 5	133699.6	132.25
1994- 1995	1314	3	-10.5	- 10898.0 5	114429.5	110.25
1995- 1996	2144	4	-9.5	- 10068.0 5	95646.48	90.25
1996- 1997	2821	5	-8.5	-9391.05	79823.93	72.25
1997- 1998	3557	6	-7.5	-8655.05	64912.88	56.25
1998- 1999	2462	7	-6.5	-9750.05	63375.33	42.25
1999- 2000	2155	8	-5.5	- 10057.0 5	55313.78	30.25
2000- 2001	2428	9	-4.5	-9784.05	44028.23	20.25
2001- 2002	3571	10	-3.5	-8641.05	30243.68	12.25
2002- 2003	3361	11	-2.5	-8851.05	22127.63	6.25
2003- 2004	2079	12	-1.5	- 10133.0 5	15199.58	2.25
2004-	3213	13	-0.5	-9089.05	4544.525	0.25

2005						
2005-2006	4355	14	0.5	-7857.05	-3928.53	0.25
2006-2007	11119	15	1.5	-1093.05	-1639.58	2.25
2007-2008	15921	16	2.5	3708.95	9272.375	6.25
2008-2009	37094	17	3.5	24881.9	87086.83	12.25
2009-2010	27044	18	4.5	14831.9	66743.78	20.25
2010-2011	21007	19	5.5	8794.95	48372.23	30.25
2011-2012	34621	20	6.5	22408.9	145658.17	42.25
2012-2013	22789	21	7.5	10576.9	79327.13	56.25
2013-2014	22038	22	8.5	9825.95	83520.58	72.25
2014-2015	28875	23	9.5	16662.9	158298	90.25
2015-2016	29908	24	10.5	17695.9	185807.5	110.25
2016-2017	42373.20	25	11.5	30161.1	346853.3	132.25

- For the financial year 2017-2018, the period will be taken to be 26.

Hence, we have:

$$m_{26} = 1928717/1150 = 1677.145$$

$$Y_{26} = (1677.145 * 26) + 12212.05 = 55817.825$$

Hence for Financial Year 2017-2018, the FDI inflow is predicted to be \$55817.825 Million.

12. FY 2018-2019 FDI Inflow Forecast:

- Now to calculate the FDI inflow for the Financial Year 2018-2019, we will replace the FDI inflow for the year 1993-1994 by the FDI inflow for the financial year 2017-2018.

- Hence we have the following set of values:

Now X' (Average value of x_i) = 14.5

Now Y' (Average value of y_i) = 14306.74

Year	y_i (FDI inflow in US \$ Millions)	x_i (Period)	$(x_i - X')$	$(y_i - Y')$	$(x_i - X')(y_i - Y')$	$(x_i - X')^2$
1994-1995	1314	3	-11.5	-12992.74	149416.5	132.25
1995-1996	2144	4	-10.5	-12162.74	127708.8	110.25
1996-1997	2821	5	-9.5	-11485.74	109114.5	90.25
1997-1998	3557	6	-8.5	-10749.74	91372.79	72.25
1998-1999	2462	7	-7.5	-11844.74	88835.55	56.25
1999-2000	2155	8	-6.5	-12151.74	78986.31	42.25
2000-2001	2428	9	-5.5	-11878.74	65333.07	30.25
2001-2002	3571	10	-4.5	-10735.74	48310.83	20.25
2002-2003	3361	11	-3.5	-10945.74	38310.09	12.25
2003-2004	2079	12	-2.5	-12227.74	30569.35	6.25

2004-2005	3213	13	-1.5	-11183.74	16775.61	2.25
2005-2006	4355	14	-0.5	-9951.74	4975.87	0.25
2006-2007	11119	15	0.5	-3187.74	-1593.87	0.25
2007-2008	15921	16	1.5	1614.26	2421.39	2.25
2008-2009	37094	17	2.5	22787.26	56968.15	6.25
2009-2010	27044	18	3.5	12737.26	44580.41	12.25
2010-2011	21007	19	4.5	6700.26	30151.17	20.25
2011-2012	34621	20	5.5	20314.26	111728.43	30.25
2012-2013	22789	21	6.5	8482.26	55134.69	42.25
2013-2014	22038	22	7.5	7731.26	57984.45	56.25
2014-2015	28875	23	8.5	14568.26	123830.2	72.25
2015-2016	29908	24	9.5	15601.26	148212	90.25
2016-2017	42373.205	25	10.5	28066.46	294697.9	110.25
2017-2018	50858.632	26	11.5	36551.89	420346.8	132.25

- For the financial year 2018-2019, the period will be taken to be 27.

Hence, we have:

$$m_{27} = 2194171/1150 = 1907.97$$

$$Y_{27} = (1907.97 * 27) + 14306.74 = 65803.03$$

Hence for Financial Year 2018-2019, the FDI inflow is predicted to be \$65803.03 Million.

13. FY 2019-2010 FDI Inflow Forecast:

- Now to calculate the FDI inflow for the Financial Year 2019-2020, we will replace the FDI inflow for the year 1994-1995 by the FDI inflow for the financial year 2018-2019.

- Hence we have the following set of values:

Now X' (Average value of x_i) = 15.5

Now Y' (Average value of y_i) = 16813.01

Year	y_i (FDI inflow in US \$ Millions)	x_i (Period)	$(x_i - X')$	$(y_i - Y')$	$(x_i - X')(y_i - Y')$	$(x_i - X')^2$
1995-1996	2144	4	-11.5	-14669	168693.5	132.25
1996-1997	2821	5	-10.5	-13992	146916	110.25
1997-1998	3557	6	-9.5	-13256	125932	90.25
1998-1999	2462	7	-8.5	-14351	121983.5	72.25
1999-2000	2155	8	-7.5	-14658	109935	56.25
2000-2001	2428	9	-6.5	-14385	93502.5	42.25
2001-2002	3571	10	-5.5	-13242	72831	30.25
2002-2003	3361	11	-4.5	-13452	60534	20.25
2003-	2079	12	-3.5	-14734	51569	12.25

2004						
2004-2005	3213	13	-2.5	-13600	34000	6.25
2005-2006	4355	14	-1.5	-12458	18687	2.25
2006-2007	11119	15	-0.5	-5694.01	2847.005	0.25
2007-2008	15921	16	0.5	-892.011	-446.0055	0.25
2008-2009	37094	17	1.5	20280.99	30421.485	2.25
2009-2010	27044	18	2.5	10230.99	25577.475	6.25
2010-2011	21007	19	3.5	4193.989	14678.961	5
2011-2012	34621	20	4.5	17807.99	80135.955	12.25
2012-2013	22789	21	5.5	5975.989	32867.939	5
2013-2014	22038	22	6.5	5224.989	33962.428	5
2014-2015	28875	23	7.5	12061.99	90464.925	5
2015-2016	29908	24	8.5	13094.99	111307.41	5
2016-2017	42373.20	25	9.5	25560.19	242821.80	5
2017-2018	50858.63	26	10.5	34045.62	357479.01	5
2018-	61464.42	27	11.5	44651.42	513491.33	5

2019	7					
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- For the financial year 2019-2020, the period will be taken to be 28.

Hence, we have:

$$m_{28} = 2540193 / 1150 = 2208.864$$

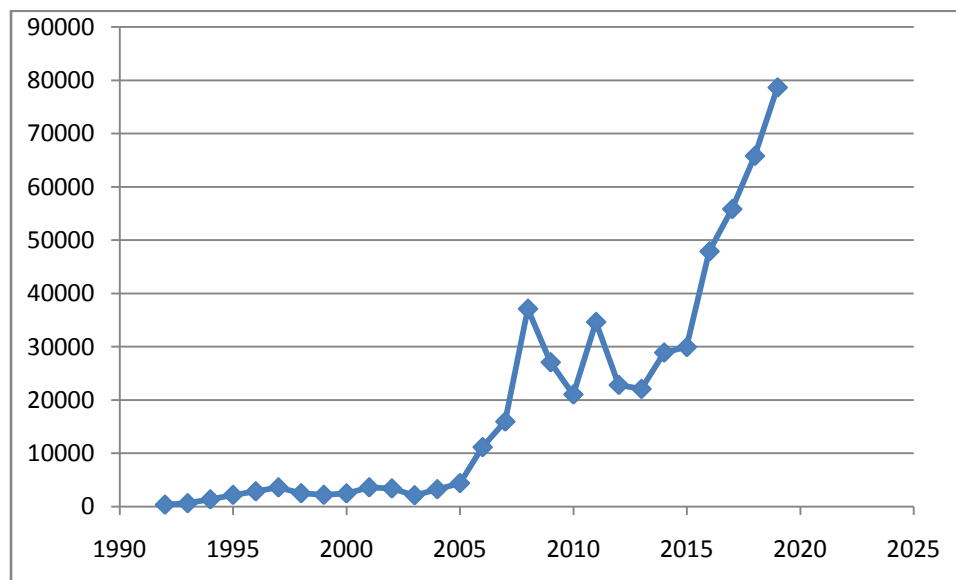
$$Y_{28} = (2208.864 * 28) + 16813.01 = 78661.202$$

Hence for Financial Year 2018-2019, the FDI inflow is predicted to be \$78661.202 Million

14. Forecast Summary:

Financial Year	Predicted FDI Inflow (In US \$ Millions)
2016-2017	47875.282
2017-2018	55817.825
2018-2019	65803.03
2019-2020	78661.202

- The following graph shows the trend in the FDI Inflow in India (in \$ Millions) up to the financial year 2019-2020:



(Financial Year)

- The graph shows a positive trend which indicated that the FDI inflow in India is predicted to increase in the near future.

15. Factor Causing Increase In FDI in India In The Coming Years:

- The major factor which is responsible for rapid growth of FDI inflow in India is the “Make in India” policy. Make in India is an initiative taken by the India Government to encourage multi-national companies and organizations as well as national organizations to manufacture their products in India. Make in India was launched in 2014 by country’s Prime Minister Mr. Narendra Modi.

- Due to implementation of Make in India policy, the FDI inflow witnessed a growth of roughly 87 percent. In 2014-15, country witnessed unprecedented growth of 717 percent on Investment by Foreign Institutional Investors (FIIs) The FDI inflow during the financial year 2014-2015 was spread across major sectors including Service Sector (US \$ 3.2 Billion) , Telecommunication (US \$ 2.8 Billion), Trading (US \$ 2.7 Billion), Automobile Industry (US \$ 2.5 Billion), Computer Software and Hardware (US \$ 2.2 Billion) , Drugs and Pharmaceuticals (US \$ 1.5 Billion) and Infrastructure (US \$ 0,75 Billion).

- Due to Make in India, a large number of multinationals have started their operations in India and it has lead to an increase in FDI inflow in India. As more and more companies and organizations are being drawn towards the Make in India policy, it is only likely that the FDI inflow will exponentially grow in the coming years, as predicted by our forecast.

Conclusion:

FDI plays a crucial role in development of a country. It improves the economy of a country by promoting transfer of technology, strengthening infrastructure, increasing productivity and opening new employment opportunities. Therefore FDI as a whole is very beneficial for the country’s economy. A developing country such as India can greatly benefit from FDI. The launch of the “Make in India” policy is a great decision taken by the Government of India to increase the FDI inflow in the country. Make in India is attracting a lot of foreign investors and companies to manufacture their products in India and it is predicted that the FDI inflow in India will significantly rise in the coming years.

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