ISSN : 2350-0743

www.ijramr.com

International Journal of Recent Advances in Multidisciplinary Research
Vol. 05, Issue 05, pp.3841-3848, May, 2018

RESEARCH ARTICLE

CORRELATION OF FDI WITH GDP, SENSEX AND NIFTY

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ARTICLE INFO

Article History:
Received 14th February, 2018
Received in revised form
27th March, 2018
Accepted 24th April, 2018
Published online 30th May, 2018

Keywords:

FDI,
GDP,
Sensex,
Nifty

ABSTRACT

Indian financial market has seen an extraordinary volatility in the last few years. Since the year 2002, Indian market has grown from a much volatile condition to growth phenomena, from a SENSEX point of 5500 in December 2003 to 13,787 in December 2006 and crossed the mark of 20,000 in the year 2007 and again in 2013. Due to various reasons, the stock market has also experienced drastic decline to even less than 8,000 points in 2008. It is not because of only the domestic market but also the international investors. There are many other variables which contribute to the positive growth of the stock market. FIIs investment is considered to be one of the biggest push after the economic fundamentals. There is no doubt that the liberalisation of the FII flows into the Indian Capital Market since 1993 has had a considerable impact on Indian stock market. The present paper is an attempt to explore the FDIs investment behaviour and its relationship with GDP, SENSEX and NIFTY movement. Further, an attempt is made to develop an understanding of the dynamics of the trading behaviour of FDIs and effect on the Indian stock market. The study is covers the period, financial year 2000-2001 to 2016-17on GDP, BSE Sensex and Nifty and FII activity. It provides the evidence of significant positive correlation between FDI activity and effects on Indian Capital Market. The analysis also finds that the movements in the Indian Capital Market are fairly explained by the FDI net inflows

INTRODUCTION

Foreign direct investment (FDI) or foreign investment refers to the net inflows ofinvestment to acquire a lasting management interest (10 % or more of voting stock) in anenterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balanceof payments. It usually involves participation in management, joint-venture, transfer oftechnology and expertise. There are two types of FDI: inward foreign direct investment andoutward foreign direct investment, resulting in a net FDI inflow (positive or negative) and "stockof foreign direct investment", which is the cumulative number for a given period. Direct investment excludes investment through purchase of shares.FDI is one example ofinternational factor movement. An investment abroad, usually where the company being investedin is controlled by the foreign corporation. The simplest explanation of FDI would be a directinvestment by a corporation in a commercial venture in another country. A key to separating thisaction from involvement in other venture in foreign country is that the business enterpriseoperates completely outside the economy of the corporation's home country.

Need for FDI: Developing economies like India needs a large inflow of the capital in terms of FDI. This is required for the development of the basic infrastructure like roads, railways, warehouses, banking and insurance services etc. Many countries in the world may not be having appropriate infrastructure due to lack of the funds, now better infrastructure facilities can be easily created if a country-allows the foreign giant to invest. We can say that foreign capital is a unique remedy for the scarcity- of all resources. Moreover, FDI may involve new technologies and expertise may not beavailable in the domestic economy. Another important motivation of FDI is efficiency seeking. Low cost of production, deriving mostly from cheap labour is the driving force of many FDIs in developing countries. It may be kept in mind that FDI would not take place in the absence of required infrastructural facilities to develop the industry7. In nutshell we can say that there is significant need of FDI for those countries which are having scarcity of resources, lack of infrastructure facilities, and lack of modernized technology. All these above mentioned resources can be easily raised if a country allows the foreign capital to be invested in their country According to United Nations Conference on Trade and Development (UNCTAD) World Investment Report 2016, India acquired 10th slot in the top 10 countries attracting highest FDI inflows globally in 2015. The report also mentioned that among the investment promotion agencies, India has moved up by one rank to become the sixth most preferred investment destination. India will require around US$ 1 trillion in the 12th Five-Year Plan (2012–17), to fund infrastructure growth covering sectors such as highways, ports and airways. This would require support from FDI flows. India's growth rate, along with competitive location in terms of wages and policies like Stand Up India, is expected to boost

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FDI in the coming future. Foreign Direct Investment and Economic Growth inIndia FDI is an investment in a business by an investor fromanother country for which the foreign investor has controlover the company purchased. The multi-national enterprisemay make a direct investment by creating a new foreign enterprise which is called a green field investment, or by theacquisition of a foreign firm, either called an acquisition orbrown field investment. All the countries in the world arecontinuously striving for rapid economic growth Differencesin the growth rates of the countries are explained by the differences in the endowments or levels of the factors thatare often identified as stimulants). Though, FDI is seen as a vital factor in inducinggrowth rate, however, it will only lead to growth if itsinflows are properly managed. Thedegree up to which FDI can be exploited for economic development depends on conduciveness of economicclimate. In the absence of such a climate FDI may becounterproductive; it may thwart rather than promote growth). The FDI inflows in India haveshown an increasing trend during the post-reform period andthe country-wise comparison of FDI inflow also indicatedthat FDI inflow into India has increased considerably incomparison to other developing economies in the recentyears. Moreover the FDI inflows into India responded positively to the liberalization measures introduced in theearly 1990s. There is close nexus between the foreign direct investment and economic growth in India. Since the initiation of the economic reforms in India in 1991,the role of foreign investment in the growth process has beenacknowledged by the policy makers. Greater emphasis onFDI inflow has been laid in recent years by allowing 100% FDI in various economic activities. Various existing literature argued that foreign direct investment inflowpositively influences economic growth through technologydiffusion, human capital formation, etc. FDI is the majormonetary source for economic growth in India. The wave ofeconomic liberalization in India gathered its momentum during economic crisis of 1991 and since then FDI hassteadily increased in India. Higher FDI inflow in India inrecent period can be argued to be facilitated by the relativelystable GDP growth rate, which in turn acted as a major boosttowards a sustainable high domestic investment.

FDI in stock Markets

Indian bourses both securities & commodities are amongst the favorite hunting spots for foreign investors betting on India's growth story. These businesses appeal to investors as they have long term horizons and signify bets on the country's growth. In 2004, 13% of the total PE investments made in the banking & financial services space were in stock exchanges. Since the beginning of 2007, 17 transactions (including consortium deals) took place with a disclosed deal value of more than S 1.15 billion. Out of this, 8 deals with disclosed value of more than S268 million happened in 2010 only. In 2010, NSE had 12 foreign investors with a total foreign investment of 32% compared to BSE which had 8 foreign investors with share of 27% investments. In the same period, MCX had 22% foreign holding & NCDEX 15% foreign investments. Some of the key US investors active in Indian exchanges are NYSE group, Atlantic LLC, Goldman Sachs, Morgan Stanley, Citigroup, Northwest Venture Partners, George Soros, Argonaut ventures. Fidelity, Intel Capital, Merrill Lynch, and Bessemer Capital are some of the US investors. Most of the transactions involving these exchanges have been secondary in nature. The change in regulations (restricting the single investor holding to 5%) also added to the spurt in secondary deals. The lucrative exchange space continues to attract more players who are looking to increase their market shares. The following table 1 presents the amount of flow of FDI in India in terms of USS million. The flow of FDIs has shown an increasing trend during the considered period except during the years i.e. 2001 to 2004 and the year 2010-11.

Sensex

The Sensex, also called the BSE 30, is a stock market index of 30 well-established and financially sound companies listed on Bombay Stock Exchange (BSE).

- 30 companies are selected on the basis of the free float market capitalization.
- These are different companies from the different sectors representing a sample of large, liquid and representative companies.
- The base year of Sensex is 1978-79 and the base value is 100.
- It is an indicator of market movement.
- If Sensex go up, it means that most of the stocks in India went up during the given period. If the Sensex goes down, this tells you that the stock price of most of the major stocks on the BSE have gone down.

Nifty

The NIFTY 50 index is National Stock Exchange of India's benchmark stock market index for Indian equity market. Nifty is owned and managed by India Index Services and Products (IISL).

- The base year is taken as 1995 and the base value is set to 1000.
- Nifty is calculated on 50 stocks actively traded in the NSE
- 50 top stocks are selected from 24 sectors.

Statement of the Problem

Foreign investment is an important economic process during which foreignstate and private companies and enterprises invest capital, technology and innovationsinto the companies of another country. As usual, the capital flows from developed countries to developing countries.Modern world economy cannot develop successfully without foreign investment. Agreat number of countries invest their funds to the economy of other countrieshaving a certain income and developing certain branches of industries of suchcountries. Due to received capital the country receives an opportunity to renew anddevelop all necessary branches of industries, to increase the effectiveness ofproduction and produce competitive goods and services. Foreign investment is apredominant and vital factor in influencing the global economic development.Foreign investment has been defined as "a transfer of funds or materials from onecountry (called capital exploring country) to another country (called host country) inreturn for a direct or indirect participation in the earnings of that enterprise. Hence,this study is pertinent to analyze the impact of FDI inflows in the economicdevelopment of India.

Objectives of the Study

In order to appreciate the importance of foreign direct investment for theIndian economy, it would be pertinent to examine the changes in the global FDIflows and the place of India within. In this respect the objectives of the study are;

1. To review the Foreign Direct Investments secured by the country;
2. To analyze the trends of Foreign Direct Investment;
3. To assess the impact of the FDI in the economic development of a country;
4. To offer suggestion for the improvement of the FDI for the economicdevelopment of the country.

Nature and Sources of Data

The present study is of analytical nature and makes use of secondary data. Therelevant secondary data are collected from the following sources:

•Publications of Government of India	•Publications of Reserve Bank of India
•Economic Survey, Government of India, Various Issues	•Department of Industrial Policy and Promotion (DIIP)
•Central Statistical Organization (CSO);	•Investment Report 2009 Published by UNCTAD
•Handbook of Statistics on the Indian Economy, RBI, Various Issues;	•Various FDI related journals have also been referred to.

Tools Used for Analysis

The analysis of the data forms the core part of the research. In order toanalyze the data and draw conclusions on this study, various statistical tools likegrowth rates, regression and correlation have been used through EXCEL 2016 and SPSS21Software.

Period of the Study

The study period is starting from the financial year 2000-01 to 2016-17.

Limitations of the Study

The study, as limitations, is confined only to review and analyze the selectedindicators for the period of study.

Literature

Kali Ram Gol, Mridul Dharwal and Ankur Agarwal studied the impact of FDI on economic growth in India, for the period 1990 to 2011. The two-way link between foreign direct investment and growth for India is explored by Chandana Chakraborty & Parantap Basu using a structural cointegration model with vector error correction mechanism. The existence of two cointegrating vectors between GDP, FDI, the unit labour cost and the share of import duty in tax revenue is found, which captures the long run relationship between FDI and GDP. A parsimonious vector error correction model (VECM) is then estimated to find the short run dynamics of FDI and growth. Our VECM model reveals three important features: (a) GDP in India is not Granger caused by FDI; the causality runs more from GDP to FDI; (b) trade liberalization policy of the Indian government had some positive short run impact on the FDI flow; and (c) FDI tends to lower the unit labour cost suggesting that FDI in India is labour displacing. Asia, have been witnessing an immense surge of FDI inflows during the past two decades. Even though India has been a latecomer to the FDI scene compared to other East Asian countries, its considerable market potential and a liberalized policy regime has sustained its attraction as a favourable destination for foreign investors. This research paper of Bhavya Malhotra aims to examine the impact of FDI on the Indian economy, particularly after two decades of economic reforms, and analyzes the challenges to position itself favourably in the global competition for FDI. The paper provides the major policy implications from this analysis, besides drawing attention on the complexities in interpreting FDI data in India Sourangsu Banerji studied the effects of Foreign Direct Investment (FDI) with respect to India and its economy and tried to analyze the merits and demerits of FDI upon implementation in the Indian domestic market. Foreign Direct Investment (FDI) as a strategic component of investment is needed by India for achieving the economic reforms and maintains the pace of growth and development of the economy. The paces of FDI inflows in India initially were low due to regulatory policy framework but there is a sharp rise in investment flows from 2005 towards because of the new policy has broadened. The study tries to find out how FDI seen as an important economic catalyst of Indian economic growth by stimulating domestic investment, increasing human capital formation and by facilitating the technology transfers. The main purpose of the study by Venkata Suresh and Ramakrishna was to investigate the impact of FDI on economic growth in India.

R.Karthik and N.Kannan investigated the impact of FDI on the stock market development of India. The key interest revolves around the complementary or substituting role of FDI in the stock market development of India. The study also examined the other major contributing factors towards the development of stock market. An ARDL bound testing approach is used for long-run relationship among variables and the error correction model is used for short run dynamics. The results support the complementary role of FDI in the stock market development of India. Other macroeconomic variables affecting stock market development are domestic savings, GNP per capita, and inflation. Rahul Dhiman and Preeti Sharma attempted to study the impact of foreign direct investment on the Indian stock market. Various statistical tools will be applied in order to analyze the study. The tools to be used are coefficient of correlation, regression analysis. In order to study the impact, Sensex and nifty are used as they are representing the Indian stock market. Data of 12 years 2001-2012 suggests that amount of FDI has a direct impact on both Sensex and Nifty. The study concludes that flow of FDI in India determines the trend of Indian Stock Market.

The research article by Vidya Sekhri and Moinul Haque attempts to develop a study to find the relationship and impact of FDI & FII on Indian stock market using the statistical measures-correlation coefficient and multi regression for 14 years data spanning from 2000 to 2014.Sensex and Nifty are considered as the representative of stock market. The analysis of the current study provides the evidence of strong positive correlation between FDI & Sensex and FDI & nifty. It also provides the evidence of moderate positive correlation betweenFII activity and effects on Indian Capital Market. Both FDI and FII determine the trend of Indian stock market. M. Syed Ibrahim and Muthusamy attempted to review the importance of foreign direct investments in Indian economy, particularly after a decade of economic reforms and analyze the role played by the FDI in the economic development of the country. The study is diagnostic and exploratory in nature and makes use of secondary data. The study finds and concludes that the foreign direct investment in India have significantly improved and developed the economy as well. This study of Swapna S. Sinha et al. fills the gap in the literature by analyzing the Indian data at the relevant micro state level for the period 1992-2005 and comparing it with the Chinese data for period of 1978-2005 at the relevant economic zone level. Indian FDI attraction model was tested using OLS and autoregressive models and it was found that India has grown due to its human capital, size of the market, rate of growth of the market, and political stability. For China, congenial business climate factors comprising of making structural changes, creating strategic infrastructure at SEZs, and taking strategic policy initiatives of providing economic freedom, opening up its economy, attracting diaspora, and creating flexible labor laws were identified as drivers for attracting FDI. The model using these variables was tested with OLS regression and autoregressive regression analysis and was found significant. There are lessons that India can learn from China. Emulating and replicating successful infrastructural stories such as DMRC, DVP.

The paper written by J. Pavithratries to highlight the recent issue of Foreign Direct Investment inthe retail segments in both formats ofsingle brand and multi-brand. The foreign investment which has prohibited entry of investment in multi-brand has now emerged as the main issue The government recently has announced the foreign investment of 49% stakefor the foreign players to enter into the retail segment. This paper will exhibit the necessity and its impact of foreigninvestment of retail in both single brand and as well as multi-brand. This paper will be an eye opener with the SWOTAnalysis and the key issues and the initiatives to be taken in this sector. The main objective of the paper "Effects of Foreign Direct Investment on GDP: Empirical Evidence from Developing Country" by Arafatur Rahaman and Sumit Chakrabortyis was to investigate existence and nature of the effect of FDI on GDP in Bangladesh from the perspective of developing country. The researcher applies cointegration test that confirmed the existence of long-run equilibrium relationship and Granger causality test assured the presence of unidirectional causality which runs from foreign direct investment to GDP. Findings of the study concluded that comparing to neighbor Asian countries FDI inflow is very low and Bangladesh should develop infrastructure, skill labor, shortage of power and electricity generation, investment friendly macroeconomic framework & also political stability to attract foreign investors significantly.

This research study of Nadem Iqbal et al. is related to FDI and GDP and the main aim is to validate the relationship between them. Foreign direct investment (FDI) is considered as a growth accelerating component that has received a great attention in developed countries even in developing and less developed countries during recent years. Now FDI has greater importance in closed economy. FDI benefits any economy in terms of technology, skilled labor and skills transfer to the host countries. For data collection, 30 year data from 1983 to 2012 was collected and the cobb-Douglas Production function is used to test the relationship. Our research variables are Gross Capital Formation (K), Labor (L), Health Expenditure (H), FDI and openness to trade in export oriented economy (OP*FDI). The authors have followed the Bhagwati's hypothesis that was: FDI has greater impact on GDP in the export oriented economy. For data analysis, we have examined the descriptive statistics, correlation and regression model. For this we incorporate the production function in regression model. In brief, the results show that there is a positive relationship between FDI and GDP in Pakistan. But, Pakistan has not sufficient flow of FDI during past decades. And main point to consider which is evident through statistics and results is that there is greater impact of FDI in the open trade policy regimes. It is also concluded that FDI impact may be situation and culture related. So, the extent of FDI economic benefits cannot be predicted. Rukhsana Kaliminvestigated the impact of FDI on the stock market development of Pakistan. The key interest revolves around the complementary or substituting role of FDI in the stock market development of Pakistan. The study also examines the other major contributing factors towards the development of stock market. An ARDL bound testing approach is used for long-run relationship among variables and the error correction model is used for short run dynamics. Our results support the complementary role of FDI in the stock market development of Pakistan. Other macroeconomic variables affecting stock market development are domestic savings, GNP per capita, and inflation. The research paper cited at present is an attempt to find out the impacts of FDI (Foreign Direct investment), FIIs (Foreign Institutional Investment), and FPIs (Foreign Portfolio investment) inflows on the movement of BSE (Bombay Stock Exchange) and NSE (National stock exchange) during period under study. The study is purely based on secondary data which were analyzed through Regression (OLS Model), Karl Pearson's correlation, Analysis of Variance, etc., and found that FDI affects the most both Sensex and Nifty up to 61% and 86% respectively and is associated highly and positively with both the markets with a score of 0.78 and 0.92 respectively according to the Karl Pearson's coefficient of correlation. However, the FPIs showed a very low impact on Sensex and a comparative high impact on NSE. During the study period the least significantfactor with lowest impact on senex and nifty was FIIs.

The paper "Foreign Direct Investment in India" ofShalini Aggarwal,Ankush Singla and Ritu Aggarwal tries to study the need of FDI in India, to exhibit the sector-wise & year-wise analysis of FDI's in India, to rank the sectors based upon highest FDI inflows. The results show that Mauritius is the country that has invested highly in India followed by Singapore, Japan, and USA and so on. It also shows that there has been a tremendous increase in FDI inflow in India during the year 2000 to 2011. Foreign investment has become a striking measure of economic development in both developed and developing countries. Foreign investment was introduced in 1991 under Foreign Exchange Management Act (FEMA). Now the developing countries, including India, are witnessing changes in the composition of capital flows in their economies because of the expansion and integration of the world equity market. The flow of foreign capital is playing a significant role in the development of Indian stock markets. Since Indian capital market is vast and hence attract investors as their investment destination. FDI and FII thus have become instruments of international economic integration and stimulation. The flow of FDI and FII is increasingly seen as an important cause of stock market volatility. This state of affairs has propelled researchers to study the extent of relation between foreign capital flows and stock market volatility. In this context, Pooja Nagpal et al. made an attempt is made to study the impact of FDI and FII flow on Indian Stock market (BSE Sensex and NSE Nifty). The study covers the time horizon of 10 years from 2005-06 to 2014-15.

The spectacular and unprecedented growth of FDI in the global economic landscape over the last two decades has made it an integral part of the development strategy of both the developed and developing nations. It acts as a major catalyst in the development of a country through up-gradation of technology, managerial skills and capabilities in various sectors. Foreign Direct Investment (FDI) is considered to be the lifeblood of economic development especially for the developing and underdeveloped countries. It plays an important role in the long-term development of a country not only as a source of capital but also for enhancing competitiveness of the domestic economy through transfer of technology, strengthening infrastructure, raising productivity and generating new employment opportunities. Allowing FDI proves good as improvements in supply chain technologies and informational externalities to local players and competitive dynamics that could benefit consumers and suppliers. The present paper of Smitha B Nair et al.is an attempt to study the trends in flow of FDI in Indian Economy. The paper also focuses on the correlation of FDI inflows with various economic indicators. Jasbir, Sumita, C. and Anupama, S.analyzed the requirement of FDI in economic development of the country and the trend and role of FDI in enhancing quality products. Their study says that foreign direct investment in a country is the lone and most suitable tool integrating international economy into a country's economy. It further says that FDI helps in the sustainable growth of economy, reduction in BOP etc. They suggests that FDI should not be confined to service sector alone, rather it should invest in infrastructure sector as well for the development of the country.

Renuka and Lalitha conducted a study about the deviation of earlier trend of FDI during the introductory regime of economic reforms and the changes after one and a half decades. Economic reforms were framed with the expectation that it would attract huge foreign direct investment, however initial response was disappointing. After several amendments and relaxations, the investment graph started showing a steady and steep increase giving progressive signs, though India is behind few developing countries like China. The paper conclude with the view that India continues to relax policies to attract more investments and thereby strengthen the country's economy and overall development. Bhavya shares the view that India is a favorable destination for investment by foreign entities. The paper examines the challenges for sustaining India's current position in the competitive field of foreign investment. The study covers areas like factors of FDI inflow, trends and patterns, impact on Indian economy etc. Conclusion of the paper reflects the firm opinion that foreign direct investment in India has had a positive impact and it acts as a catalyst in the economic growth of the country. Abhishekhas done a quite detailed study and analyzed the trends of foreign direct investment routes, countries and sectors in India during the period 2000-2015. Based on his findings he has concluded that Mauritius has topped in the list as the most dominant investor due to its Double Taxation Avoidance Agreement with India. He also claims that service sector and construction and development sector attracted major investment and continued its development through more job opportunities. With substantial evidence, the paper says that FDI will not only enhance the country's economic growth through more employment, but also achieve overall development through the liberalization measures. Priyanka, and Ektasays that regardless of all favorable conditions, India have attracted less FDI inflows when compared to other countries. The study analyzes the problems and challenges that made the country less attractive and made few recommendations to overcome this situation. The study recommend more liberalized policies of FDI in Airports, insurance, media and retail, in addition to implementation of GST, elimination of bureaucratic hurdles and labor law reforms. The paper further states that implementing these recommendations will definitely help to attract more investments in coming years. The research article of Sirisha et al analyses the sector wise and country wise inflows of FDI during the period 2009-2014. This paper begins by reviewing possible sources of FDI and then provides a comprehensive evaluation of the empirical evidence on sector wise FDI. This study is entirely based on secondary data. It also point out the sector-wise distribution of FDI inflow to know about which has concerned with the chief share. The present study is based on secondary data collected from different sources. The paper concludes that the Government should design the FDI policy in such a way where FDI inflows can be utilized as means of enhancing domestic production, savings and exports through the equitable distribution among states so that they can attract FDI inflows at their own level. As per the study, the sectors that attracted higher inflows were Communication services as per the CAGR and as per the share it is manufacture sector. The Luxembourg was at highest FDI inflows as per the CAGR and as per the share it is from Mauritius.

Data and Statistical Analysis

Table.1. FDI, GDP, Sensex and Nifty Data for the Study Period

Financial Year	FDI		GDP	Sensex	Nifty
	Total Inflows (million)	% growth over previous year	At current prices		
2000-01	4,029	-	2,000,743	13787	2914
2001-02	6,130	(+) 52 %	2,175,260	20287	4090.15
2002-03	5,035	(-) 18 %	2,343,864	9647	6274.3
2003-04	4,322	(-) 14 %	2,625,819	17465	2828.45
2004-05	6,051	(+) 40 %	3,390,503	20509	5244.75
2005-06	8,961	(+) 48 %	3,953,276	15455	5395.75
2006-07	22,826	(+) 155 %	4,582,086	19427	5292.55
2007-08	34,843	(+) 53 %	5,303,567	21171	5951.35
2008-09	41,873	(+) 20 %	6,108,903	27499	6261.65
2009-10 (P)	37,745	(-) 10 %	7,248,860	26118	8395.45
2010-11 (P)	34,847	(-) 08 %	8,391,691	26626	7437.8
2011-12 (P)	46,556	(+) 34 %	9,388,876	13787	8897.95
2012-13 (P)	34,298	(-) 26%	10,472,807	20287	2914
2013-14 (P)	36,046	(+) 5%	10,522,686	9647	4090.1
2014-15 (P)	44,291	(+) 23%	11,357,529	17465	6274.3
2015-16	40,823	(-) 10 %	12,165,481	20509	7738.40
2016-17	21,186 (Upto March)	(-) 08 %	2,000,743 (Estimated)	29,895	9173.75

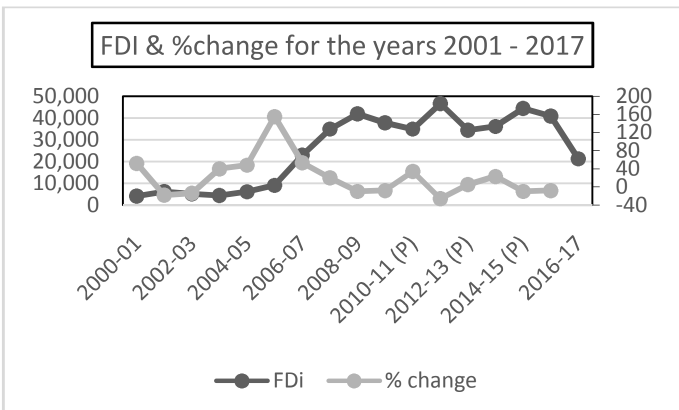


Fig. 1. FDI & % Change of FDI for the study period

Analysis and Interpretation of Statistical Data

Analytical Tools & Technique In order to analyze the collected data the statistical tools such as correlation and Multi regression OLS model is used. Correlation coefficient is a statistical measure that determines the degree to which two variable's movements are associated. Correlation coefficient value ranges from -1 to 1. Negative value of correlation indicates: if one variable increases in its values, the other variable decreases in its value and positive value indicates: if one variable increases in its values the other variable also increases in its value. In the current study to study the linear relationship between variables such as FDI and GDP, Sensex & Nifty correlation is applied. The multiple regression analysis is a statistical technique used to evaluate the effects of two or more independent variables on a single dependent variable. In the current paper attempt is made to study the impact of FDI on GDP, Sensex and Nifty. So FDI is considered the independent variables the dependent variable for model 1 is GDP, Sensex and Nifty respectively.

A. Correlation

Table 2.Correlation between FDI and GDP, Sensex & Nifty

Parameter	GDP	Sensex	Nifty
Correlation			
Pearson Correlation	.871	.267	.428
Sig. (2-tailed)	.000	.299	.087
N	17	17	17

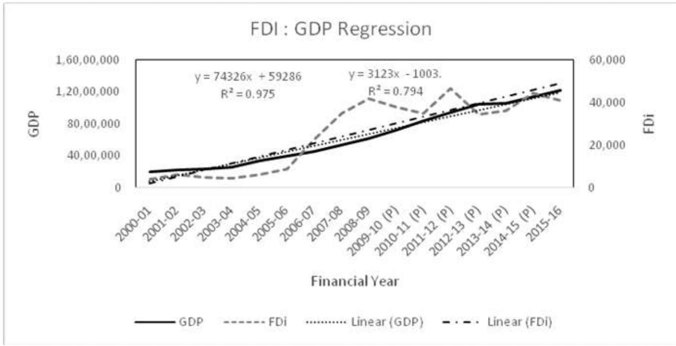


Fig.2. FDI: GDP Regression Chart

Correlation is applied to study the statistical relationship of the variables FDI and GDP, BSE Sensex & CNX Nifty. The table 2 presents the output, when correlation is run to the data of the study period. Based on the results it can be concluded that there is a very strong positive correlation between FDI &and GDP (0.871) is very strong, Sensex (0.267) and FDI & Nifty, (0.428) and the correlation is found to be significant at 1 percent level of significance. The correlation values in the case of Sensex and nifty are less when compared to GDP but still cannot be considered as not of significance.

FDI: GDP regression chart has trend lines almost parallel and R square values does not differ much. Similar characteristics are observed in the case of Sensex and Nifty regression charts.

B. Impact of flow of FDIs and FIIs on BSE Sensex Multi regression OLS is used to analyse the data: Independent Variable: FDI and FII Dependent Variable: GDP, BSE SENSEX & Nifty. The table3 model summary reports the strength of the relationship between the model and the dependent variable. R, the multiple correlation coefficients, is the linear correlation between the observed and model predicted values of the dependent variable.

Table.3 Model Summary

2.	Model Summary, Model 1	GDP	Sensex	Nifty
	R	.871[a]	0.267[a]	.428[a]
	R Square	.758	0.072	.183
	Adjusted R Square	.741	0.010	.129
	Std. Error of the Estimate	1822600.57093	5869.41	1760.05417
	Durbin Watson	1.853	1.694	1.743
	a. Predictors: (Constant), FDI	b. Dependent Variable		

Its large value indicates a strong relationship. R Square, the coefficient of determination, is the squared value of the multiple correlation coefficients. The value of R^2 in the case of GDP is 0.758; it shows that the model explains 75.8% of the variation. In other words the dependent variables FDI are able to explain around 76% the variation of the dependent variable (GDP). The other variables, Sensex and Nifty can be understood similarly. Durbin-Watson static informs us whether the assumption of independent errors is tenable. The closer to 2 the value is the better and for the data. It was 1.853, 1.694 and 1.743 for the variables, GDP, Sensex and Nifty respectively, which is close to the 2.

C. ANOVA

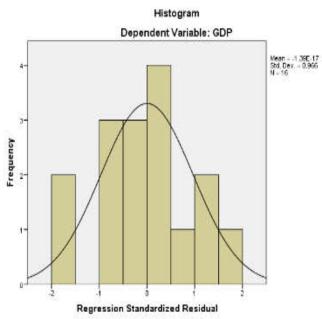
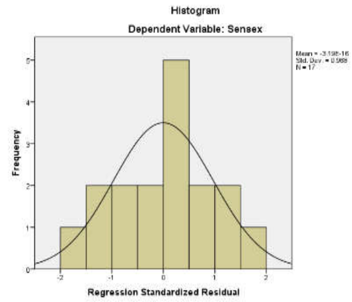
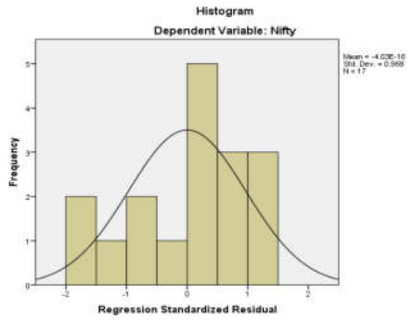
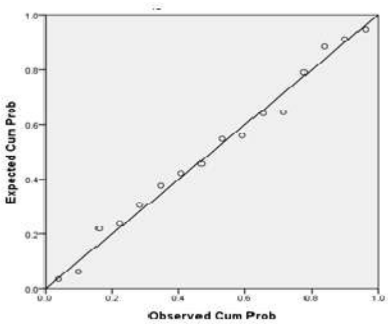
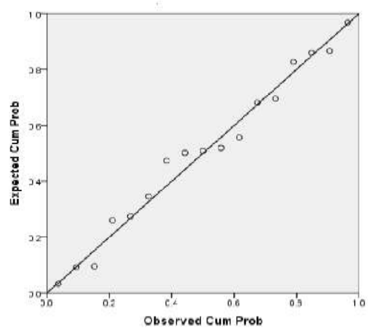
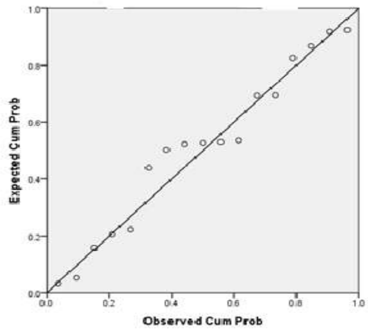
Table.4. ANOVA

ANOVA[a] Model 1				
Sum of	Regression	1.46E+14	39807311.076	10420697.132
Squares	Residual	4.	516750794.688	46466860.367
	Total	651E+13	556558105.765	56887557.500
	Regression	1.925E+14	1	1
df	Residual	1	15	15
	Total	14	16	16
	Regression	15	39807311.076	10420697.132
Mean Square	Residual	1.46E+14	34450052.979	3097790.691
	Regression	3.222E+12	1.156	3.364
F	Regression	43.964	.299[b]	.087[b]
Sig.		0.00[b]		

The ANOVAtests the acceptability of the model from a statistical perspective. The Regression row displays information about the variation accounted for by the model. The Residual row displays information about the variation that has not been accounted by the model. The regression value is much less than residual sums of squares, which indicates that around 93% of the variation in SENSEX is explained by the model. However, F statistic is found significant, since the p value (0.000) less than 0.05.

Table.5. Collinearity in the data

Coefficients[a] Model 1		GDP	SENSEX	NIFTY
(Constant)				
Unstandardized	B	1302271.190	16923.311	4053.279
Coefficients	Error (Std)	906992.447	2698.123	809.083
Standardized Coefficients	Beta			
	t	1.436	6.272	5.010
	Sig.	.172	.000	.000
FDI	B	190.512	.097	.050
Unstandardized Coefficients	Error (Std)		.091	.027
Standardized Coefficients	Beta	30.471	.267	.428
Collinearity Statistics	Tolerance	1.000	1.000	1.000
	VIF	1.000	1.000	1.000
	t	.850	1.075	1.834
	Sig.	0.00	.0299	.087

5.	**Histogram**		
			
6.	**Normal P-P Plot of Regression Standardised Residual Dependent Variable : GDP**		
			

Testing for Colinearity in the data Table 5presents the coefficients and collinearity statistics when multi regression is applied. The two Collinearity statistics are tolerance and VIF. A value of VIF higher than 10, and tolerance less than 0.2 indicates a potential problem. For our current model the VIF values are all well below ten and the tolerance statistic is as well above 0.2 for all the independent variables. Hence there is no problem of Collinearity among the variables used in the model and multi regression is appropriate. In probability theory, the normal (or Gaussian) distribution is a very common continuous probability distribution. Normal distributions are important in statistics and are often used in the natural and social sciences to represent real-valued random variables whose distributions are not known. The histogram charts are very closely normal distribution is character.

Normal P-P Plot of Regression Standardised Residual Dependent Variable: GDP are linear.

The above factors lend further support to the model assumed in the studies.

Testing the hypothesis

The null hypothesis and alternative hypothesis with respect To GDP, Sensex & CNX NIFTY and FDI can be stated as:

$H_0$3: Flow of FDIs in to India and the variable trend are independent.
H_a3: Flow of FDIs in to India and the variable trend are dependent.

The p-value related to FDI shown in table 8, is 0.00, 0.029 and 0.087 for the variables, which are Less than 0.05 so null hypothesis H03 is not accepted.

Hence it is concluded that Flow of FDIs in to India and GDP, Sensex & CNX NIFTY trend are dependent.

Findings of the Study

- The FDIs flow has shown increasing trend during the considered period of study except in the past two years and during 2002-03, 2003-04, 2009-10, 2010-11 & 2012-13.
- There is a strong positive correlation between FDI &Sensex and FDI & Nifty.
- Flow of FDIs into India and BSE Sensex trend are dependent.
- Flow of FDIs into India and CNX Nifty trend are dependent.

Conclusion

The inflow of capital in terms of foreign direct investment (FDI) has definitely impacted the economy as well as the capital markets. Foreign direct Investment has provided ample opportunities as far as technological up gradation is concerned. In addition to this India has also gained the global managerial skills which were required badly to sharpen the managerial skills for Indian industry. From the current study it is quiet evident that there is strong degree of correlation between FDI &Sensex, and FDI & Nifty. From Tablel it is quiet clear that larger inflow of FDI means bullish trend in the capital markets. In addition to table 1 the statistical tools such as coefficient of correlation as well as regression analysis has proved the significant impact of the inflow of FDI on capital market.

Scope for further research

An interesting topic for future research would be to analyze how foreign direct investment in India is affected by factor endowments such as knowledge capital, in order to better explain the driving forces of FDI and more closely determine whether FDI tends to be vertical rather than horizontal in nature. It would also be very pertinent to study the impact of FDI inflows on various macro and micro economic variables. Another interesting research avenue would be to undertake a causal analysis to determine whether the relationship between FDI and growth is unidirectional or bidirectional.

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