

# Factors Affecting GDP (Manufacturing, Services, Industry): An Indian Perspective

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## ABSTRACT

*The study tries to investigate the impact of various macro economic factors on GDP components. The study used the secondary data for the period 2000-2001 to 2011-2012. Data was collected from the Economic survey of India and Reserve bank of India bulletins. The dependent variable in the study was GDP components and was expressed as a function of various macroeconomic measures of growth. These variables could be FDI, Net FII equity, Net FII debt, Import and Export. Multiple regression analysis was used to develop the relationship. In the analysis we found a significant affect of FDI, Net FII equity and Import on GDP components. But we could not found a significant affect of Net FII debt on GDP components. And it was also found that there was no significant affect of Export on GDP (Manufacturing, Industry) components but Service had a significant affect*

**Keywords:** Export, FDI, GDP, Import, Industry, Manufacturing, Services

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## Introduction

GDP is a very strong measure to gauge the economic health of a country and it reflects the sum total of the production of a country and as such comprises all purchases of goods and services produced by a country and services used by individuals, firms, foreigners and the governing bodies. It is used as an indicator by almost all the governments and economic decision-makers for planning and policy formulation. It enables one to judge whether the economy is contracting or expanding, whether it needs a boost or restraint, and if a threat such as a recession or inflation looms on the horizon. When government officials plan for the future, they consider the various economic sectors' contribution to the GDP. GDP was first developed by Simon Kuznets for a US Congress report in 1934. The volume of GDP is the sum of value added, measured at constant prices, by households, government, and industries operating in the economy. GDP accounts for all domestic production, regardless of whether the income accrues to domestic or foreign institutions.

The Organization for Economic Cooperation and Development (OECD), in a report released in November 2012, has also forecasted major shifts in global GDP by the year 2060. The report said that based on 2005 purchasing power parity (PPP) values, India is expected to overtake the U.S. economy to become the second-biggest in 2051. The report also forecasts that the combined GDP of China and India will exceed that of the combined G-7 nations (the world's richest economies) by 2025, and be 1.5 times larger by 2060 (Picardo, 2013).

The Gross Domestic Product in the country like India is experiencing a faster rate of growth in the recent years. With regards to the composition of GDP, the percentage shares of various sectors have largely changed. The percentage share of the agriculture in the total GDP has declined, on the contrary the percentage share of services in the GDP is rising faster. With this shift, the Indian economy which was considered, by and large, to be agriculture based economy but with the opening up of the economy post economic reforms of 1991, has become predominantly services-based with services accounting for 44.60% of the GDP and employing 35.70% of the population whereas agriculture accounts for 17.39% of GDP and employs 47.20% of the population and manufacturing and industry accounting for 25.75% of GDP and employing 24.70% of the population.

This change in composition of GDP puts forward an important question-since economic production & growth, as reflected by GDP, has a large impact on nearly everyone within that economy what is the role of services and manufacturing sector in economy and how does it affects the financial health of the country. It thus becomes important to understand the nature & direction of relationship between the economic growth of a country and its components. The purpose was to study the impact of various macro-economic factors (FDI, Net FII equity, Net FII debt, Import, Export) on GDP (Manufacturing, Service, Industry) components.

### *GDP Components (Manufacturing, Services, Industry)*

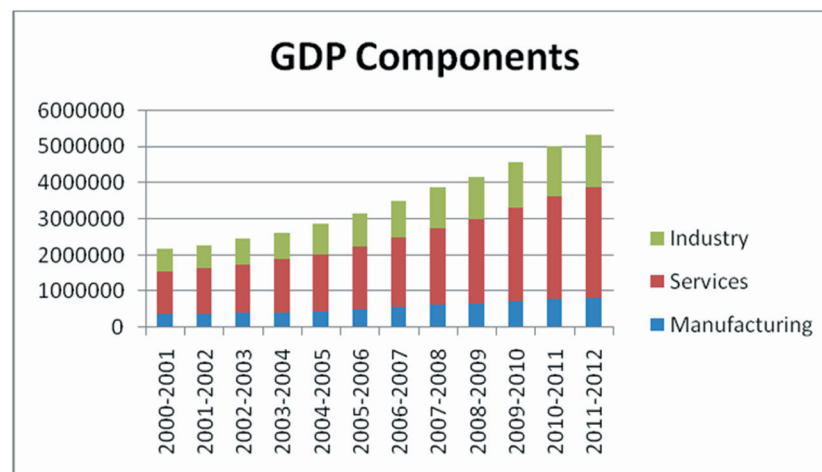


Figure 1

Source: Planning Commission 2013.

The last decade has witnessed a major shift in the composition of GDP. Share of manufacturing, service and industry in GDP has recorded a continuous increase over the years but when compared, this increase has been highest in service sector while it has been lowest in manufacturing sector, thus suggesting that in the time to come service sector is going to become the most attractive sector of Indian economy.

### Foreign Direct Investment

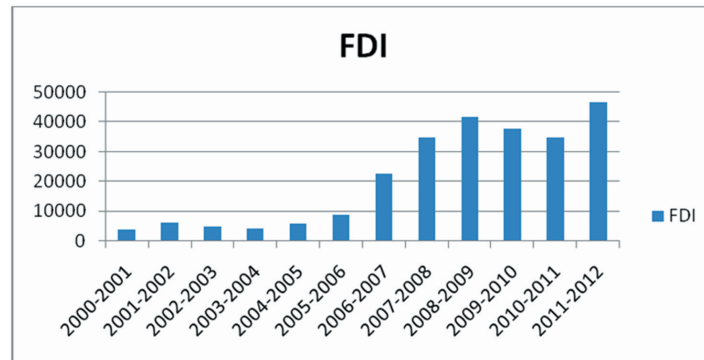


Figure 2

Source: Panning commission & Economic survey of India 2013.

FDI showed an overall increasing trend in the last decade. In the first half of the last decade FDI has remained more or less stable but 2006-07 onwards it has recorded a drastic increase, except for the years 2009-10 & 2010-11. This increase in FDI has been highest in year 2006-07 where it has more than doubled over the previous year.

### Net FII Debt and Equity

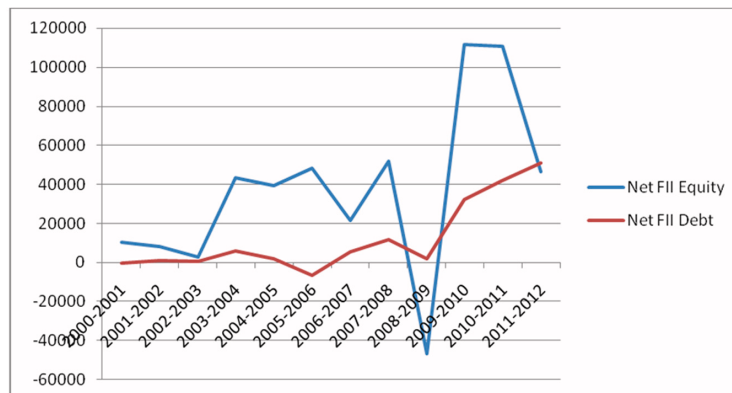


Figure 3

Source: Security Exchange Board of India.

Foreign institutional investment in equity witnessed a very volatile phase in the last decade as compared to debt which has shown an overall increasing

trend with a few minor corrections. This indicates that the Indian debt market has gradually won the investor confidence over the years and it will become more attractive in the coming time.

### *Import and Export Performance*

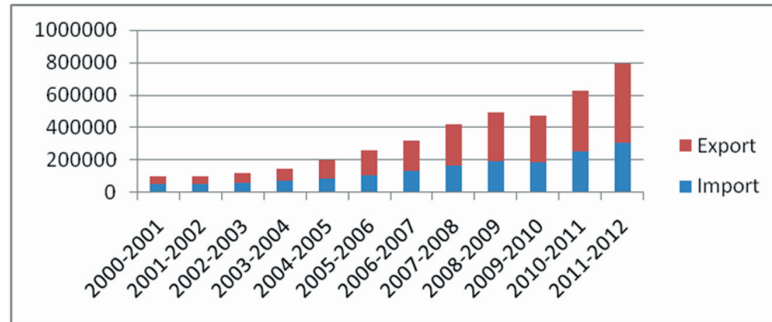


Figure 4

Source: Reserve Bank of India bulletin.

Though there has been an increase in the exports as well as imports in the last decade, the rate of increase in exports is more than that of imports, indicating that our service, manufacturing and industrial sector is not only becoming more and more self reliant but it is also increasing the foreign reserves of the country along with a favorable balance of trade.

### **Review of Literature**

(Dasgupta, 2005) revisited the role of manufacturing and services in economic development in the light of a number of new phenomena: a faster growth of services than of manufacturing in many developing countries; the emergence of 'de-industrialization' in several developing countries, at low levels of per capita income; jobless growth in the formal sector, even in fast-growing countries such as India; and a large expansion of the informal sector in developing countries. Although they examined the phenomena in the specific context of the Indian economy, the analysis had a much wider application and implications, both for economic policy and for theories of growth and structural change.

(Chandana, 2008) assessed the proposition by subjecting industry-specific FDI and output data to Granger causality tests within a panel

co-integration framework. It turns out that the growth effects of FDI vary widely across sectors. FDI stocks and output were mutually reinforcing in the manufacturing sector, whereas any causal relationship was absent in the primary sector. Most strikingly, they found only transitory effects of FDI on output in the services sector. However, FDI in the services sector appears to have promoted growth in the manufacturing sector through cross-sector spillovers.

(Lall S. N., 2004) analyzed the *role* of multinational enterprises (MNEs) in industrial development in a 'learning system' perspective. They also studied the policy tools available for using FDI for economic development in a liberalizing, post-World Trade Organization world, and the constraints to doing this. While this was a nascent debate, the special issue points to a variety of 'soft' policy options that provide a pragmatic response to the complexities of globalisation.

(Alfaro, 2004) examined the various links among foreign direct investment (FDI), financial markets, and economic growth. They explored whether countries with better financial systems can exploit FDI more efficiently. They showed that FDI alone plays an ambiguous role in contributing to economic growth. However, countries with well-developed financial markets gain significantly from FDI. The results were robust to different measures of financial market development, the inclusion of other determinants of economic growth, and consideration of endogeneity.

(Mohammad, 1983) examined the impact of foreign ownership on export performance by the largest corporate firms in India, to analyse whether the 'monopolistic advantages' of multinationals survive in its highly restrictive and regulated environment. After controlling for industrial characteristics and export incentives, foreign ownership had a positive impact on export performance. The statistical significance of the result was not very strong, but they found counters earlier works based on simple comparisons of exports at the firm level. The analysis also shed light on other influences of policy significance on export performance.

(Griffith, 2004) examined the relationship between foreign ownership and productivity, paying particular attention to two issues neglected in the existing literature the role of multinationals in service sectors and the importance of R&D activity conducted by foreign multinationals. They reviewed existing theoretical and empirical work, which largely focused on

manufacturing, before presenting new evidence using establishment-level data on production, service, and R&D activity for Great Britain. They found that multinationals played an important role in service sectors and that entry of foreign multinationals by takeover was more prevalent than green-field investments.

(Chowdhury) suggested that it is GDP that caused FDI in the case of Chile and not vice versa, while for both Malaysia and Thailand, there was a strong evidence of a bi-directional causality between the two variables. The robustness of the above findings was confirmed by the use of a bootstrap test employed to test the validity of their results.

(Basu, 2003) investigated the impact of liberalization on the dynamics of the FDI and GDP relationship. A long-run co-integrating relationship was found between FDI and GDP after allowing for heterogeneous country effects. The co-integrating vectors revealed bidirectional causality between GDP and FDI for more open economies. For relatively closed economies, long-run causality appeared unidirectional and runs from GDP to FDI, implying that growth and FDI were not mutually reinforcing under restrictive trade and investment regimes.

(Hansen, 2006) analyzed the Granger causal relationships between foreign direct investment (FDI) and GDP. Using estimators for heterogeneous panel data they found bi-directional causality between the FDI-to-GDP ratio and the level of GDP. FDI had a lasting impact on GDP, while GDP had no long-run impact on the FDI-to-GDP ratio.

(Srinivasan, 2010) investigated the causal nexus between Foreign Direct Investment (FDI) and economic growth in Association of Southeast Asian Nations (ASEAN) economies. The Johansen Co-integration result established a long run relationship between FDI and Gross Domestic Product (GDP).

(Hsiao, 2006) examined the Granger causality relations between GDP, exports, and FDI among eight rapidly developing East and Southeast Asian economies. They estimated the VAR of the three variables to find various Granger causal relations for each of the eight economies. They found each country had different causality relations and does not yield general rules. They then constructed the panel data of the three variables for the eight economies as a group and then used the fixed effects and random

effects approaches to estimate the panel data VAR equations for Granger causality tests. The panel data causality results revealed that FDI had unidirectional effects on GDP directly and also indirectly through exports, and there also existed bidirectional causality between exports and GDP for the group. The results indicated that the panel data causality analysis had superior results over the time-series causality analysis. Economic and policy implications of the analyses were then explored in the conclusions.

(Tang, 2008) showed that while there was a bi-directional causality between domestic investment and economic growth, there was only a single-directional causality from FDI to domestic investment and to economic growth. Rather than crowding out domestic investment, FDI was found to be complementary with domestic investment. Thus, FDI had not only assisted in overcoming shortage of capital, it had also stimulated economic growth through complementing domestic investment in China.

(Choong, 2004) studied the development of domestic financial sector in transferring the technological diffusion embodied in FDI inflows to the chosen countries. It was evident in all the countries under study that both FDI and economic growth were not cointegrated by themselves directly, but rather through their dynamic interaction with the development of the domestic financial sector. Their results proved that the presence of FDI inflows created a positive technological diffusion in the long run only if the evolution of the domestic financial system had achieved a certain minimum level. From the short-run causality models, the striking similarity in the behaviour of FDI on economic growth across countries suggested the possibility of common financial sector development in different countries, despite differences in their fiscal policy, industrial development, and other domestic determinants.

(Liu, 2002) investigated the causal links between trade, economic growth and inward foreign direct investment in China at the aggregate level. The integration and co-integration properties of quarterly data were analysed. Long-run relationships between growth, exports, imports and FDI were identified in a co-integration framework, in which this study found bi-directional causality between economic growth, FDI and exports. Economic development, exports and FDI appeared to be mutually reinforcing under the open-door policy.



(Zhang, 2001) provided an empirical assessment of the issue by using data for 11 economies in East Asia and Latin America. Although FDI was expected to boost host economic growth, it was shown that the extent to which FDI was growth-enhancing appeared to depend on country-specific characteristics. Particularly, FDI tended to be more likely to promote economic growth when host countries adopted liberalized trade regime, improved education and thereby human capital conditions, encourage export-oriented FDI, and maintained macroeconomic stability.

(Elboiashi, 2002) investigated the causal relationships between foreign direct investment (FDI), domestic investment (DI) and economic growth (GDP) in Egyptian, Moroccan and Tunisian economies. The study found that FDI affected negatively the DI and growth (GDP) in the short-run and positively in the long-run. In addition, there was a uni-directional causality between FDI and growth (GDP) in Egypt and Morocco, and bi-directional causality between FDI and growth (GDP) in Tunisia. DI had played a great role for driving FDI into these countries more than growth (GDP). Also, FDI was more effective than DI for promoting growth (GDP). FDI was more effective for enhancing DI than growth (GDP). Furthermore, the results indicated that FDI crowded-out DI in the short-run and crowded-in DI in the long-run.

(Yao, 2006) focused on the effect of exports and foreign direct investments FDI on economic performance, using a large panel data set encompassing 28 Chinese provinces over the period 1978–2000. Adopting Pedroni's panel unit root test and Arellano and Bond's dynamic panel data estimating technique, it was found that both exports and FDI had a strong and positive effect on economic growth. The results suggested that two development policies adopted in China were useful for other developing and transitional economies: export promotion and adoption of world technology and business practices.

(Li, 2005) investigated whether foreign direct investment (FDI) affected economic growth based on a panel of data for 84 countries over the period 1970–99. Both single equation and simultaneous equation system techniques were applied to examine this relationship. A significant endogenous relationship between FDI and economic growth was identified from the mid-1980s onwards. FDI not only directly promotes economic growth by itself but also indirectly does so via its interaction terms. The

interaction of FDI with human capital exerts a strong positive effect on economic growth in developing countries, while that of FDI with the technology gap had a significant negative impact.

(Chakraborty, 2002) suggested the two-way link between foreign direct investment and growth for India was explored using a structural co-integration model with vector error correction mechanism. The existence of two co-integrating vectors between GDP, FDI, the unit labour cost and the share of import duty in tax revenue was found, which captured the long run relationship between FDI and GDP. A parsimonious vector error correction model (VECM) was then estimated to find the short run dynamics of FDI and growth. The VECM model revealed three important features: GDP in India was not Granger caused by FDI; the causality runs more from GDP to FDI; Trade liberalization policy of the Indian government had some positive short run impact on FDI flow; and FDI tended to lower the unit labour cost suggesting that FDI in India was labour displacing.

(Ozturk, 2007) investigated empirically the impact of FDI on economic growth of Turkey and Pakistan over the period of 1975-2004. To analyse the causal relationship between FDI and economic growth, the Engle-Granger co-integration and Granger causality tests were used. It was found that these two variables were cointegrated for both the countries studied. There empirical findings suggested that it was GDP that caused FDI in the case of Pakistan, while there was strong evidence of a bi-directional causality between the two variables for Turkey.

## Research Gap

The above review of literature showed that there are a couple of studies on the relationship of GDP with FDI, GDP with FDI & Exports, GDP with import-exports and GDP with manufacturing & service sector but there was no study available on the relationship between GDP components (Manufacturing, Service, Industry) and FDI, Net FII equity, Net FII debt, Import, Export which are the major macro economic factors affecting GDP. Study of this relationship is all the more important keeping in view the growing contribution of these sectors in Indian GDP.

## Objective of the Study

To study the impact of various macro-economic factors (FDI, Net FII equity, Net FII debt, Import, Export) on GDP (Manufacturing, Service, Industry) components.

## Research Methodology

The study used the secondary data for the period 2000-2001 to 2011-2012. Data was collected from the SEBI, Planning commission report 2013, Economic survey of India and Reserve bank of India bulletins. GDP is measured by a number of components but in this study only manufacturing, service and industry were selected as major components for the period selected for the study. The dependent variables in the study was GDP components and was expressed as a function of various macroeconomic measures of growth. These variables could be FDI, Net FII equity, Net FII debt, Import and Export. Multiple regression analysis was used to develop the relationship.

## Data Analysis and Interpretation

**Table 1:** India's Manufacturing Activity from 2000-2001 to 2011-2012

<i>Year</i>	<i>Manufacturing</i>	<i>FDI</i>	<i>Net FII Equity</i>	<i>Net FII Debt</i>	<i>Import</i>	<i>Export</i>
2000-2001	363163	4029	10206.7	-391.4	44076	49975
2001-2002	371408	6130	8293	659.9	43827	51413
2002-2003	396912	5035	2534.27	338.85	52719	61412
2003-2004	422062	4322	43483.5	5709.84	63843	78149
2004-2005	453225	6051	39346	1878.9	83536	111517
2005-2006	499020	8961	48069.9	-6765.6	103091	149166
2006-2007	570458	22826	21518.93	5367.11	126414	185735
2007-2008	629073	34843	51595.3	11771	163132	251654
2008-2009	656302	41873	-46700.7	1860.8	185295	303696
2009-2010	730435	37745	111442.8	32046.6	178751	288373
2010-2011	801476	34847	110529.7	42145.1	251136	369769
2011-2012	823023	46556	46493.1	50997.3	304624	489181

Table 2

Regression Statistics						
Multiple R	0.996187					
R Square	0.992389					
Adjusted R Square	0.986046					
Standard Error	19693.95					
Observations	12					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	5	3.03E+11	6.07E+10	156.4629	2.87E-06	
Residual	6	2.33E+09	3.88E+08			
Total	11	3.06E+11				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	287308.2	23719.09	12.11295	1.92E-05	229269.7	345346.7
FDI	4.288352	1.335161	3.21186	0.018324	1.02133	7.555374
Net FII Equity	0.776821	0.200366	3.87701	0.008199	0.286543	1.267099
Net FII Debt	-0.97686	0.819919	-1.19141	0.278478	-2.98313	1.029406
Import	1.961049	1.314712	1.491618	0.186397	-1.25594	5.178034
Export	-0.48552	0.863888	-0.56202	0.594458	-2.59938	1.628334

### *Multiple Linear Regression Model*

The model obtained is:

$$\begin{aligned} \text{Manufacturing} = & 287308.2 + (4.288 \times \text{FDI}) + (0.7768 \times \text{Net FII equity}) \\ & + (-0.9768 \times \text{Net FII debt}) + (1.96 \times \text{Import}) + \\ & (-0.485 \times \text{Export}) \end{aligned}$$

The value of R square in following model is 99.23%, showing that about 99.23% of total variation in Manufacturing in India can be explained by independent variables, like FDI, Net FII equity, Net FII Debt, Import, Export. Since calculated F value is greater than critical value of F, hence the model is accepted. It can be concluded that ratio of explained variance by this model to the unexplained variance is very high. Thus the regression variables are significant in explaining the dependent variable,

Manufacturing. FDI and Net FII equity has influence on manufacturing in India as it is statistically significant as P value is less than 0.01 at 1% level of significance. But Net FII debt, Import, Export has no influence on manufacturing in India as it is not statistically significant as P value is more than 0.001 at 1% level of significance. Coefficient of FDI parameter is 4.288 that tells about dependability of manufacturing in country on FDI, if FDI parameter changes by one unit, then manufacturing in India will increase by 4.288%. Coefficient of Net FII equity parameter is 0.776 that tells about dependability of manufacturing in country on Net FII equity, if Net FII equity parameter changes by one unit, then manufacturing in India will increase by 0.776%. Coefficient of Net FII debt parameter is -0.976 that tells about no dependability of manufacturing in country on Net FII debt, if Net FII debt parameter changes by one unit, then manufacturing in India will decrease by -0.976%. Coefficient of Import parameter is 1.961 that tells about dependability of manufacturing in country on Import, if Import parameter changes by one unit, then manufacturing in India will increase by 1.961%. Coefficient of Export parameter is -0.485 that tells about no dependability of manufacturing in country on Export, if Export parameter changes by one unit, then manufacturing in India will decrease by -0.485%.

**Table 3:** India's Service Activity from 2000-2001 to 2011-2012

<i>Year</i>	<i>Service</i>	<i>FDI</i>	<i>Net FII Equity</i>	<i>Net FII Debt</i>	<i>Import</i>	<i>Export</i>
2000-2001	1179976	4029	10206.7	-391.4	44076	49975
2001-2002	1261158	6130	8293	659.9	43827	51413
2002-2003	1349035	5035	2534.27	338.85	52719	61412
2003-2004	1457797	4322	43483.5	5709.84	63843	78149
2004-2005	1576255	6051	39346	1878.9	83536	111517
2005-2006	1748173	8961	48069.9	-6765.6	103091	149166
2006-2007	1923970	22826	21518.9	5367.11	126414	185735
2007-2008	2121561	34843	51595.3	11771	163132	251654
2008-2009	2333251	41873	-46701	1860.8	185295	303696
2009-2010	2578156	37745	111443	32046.6	178751	288373
2010-2011	2829650	34847	110530	42145.1	251136	369769
2011-2012	3061589	46556	46493.1	50997.3	304624	489181

Table 4

Regression Statistics						
Multiple R	0.995045					
R Square	0.990114					
Adjusted R Square	0.981875					
Standard Error	85458.32					
Observations	12					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	5	4.39E+12	8.78E+11	120.1791	6.27E-06	
Residual	6	4.38E+10	7.3E+09			
Total	11	4.43E+12				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1018437	102924.7	9.894971	6.15E-05	766589	1270284
FDI	6.558991	5.79369	1.132092	0.300802	-7.61766	20.73564
Net FII Equity	2.369237	0.869451	2.724979	0.034415	0.241766	4.496708
Net FII Debt	-1.68196	3.557888	-0.47274	0.653104	-10.3878	7.023877
Import	1.018299	5.704955	0.178494	0.86421	-12.9412	14.97782
Export	2.968598	3.748685	0.791904	0.458572	-6.20411	12.1413

### *Multiple Linear Regression Model*

The model obtained is:

$$\text{Services} = 1018437 + (6.558 \times \text{FDI}) + (2.369 \times \text{Net FII equity}) + (-1.681 \times \text{Net FII debt}) + (1.018 \times \text{Import}) + (2.968 \times \text{Export})$$

The value of R square in following model is 99.01%, showing that about 99.01% of total variation in Service in India can be explained by independent variables, like FDI, Net FII equity, Net FII Debt, Import, Export. Since calculated F value is greater than critical value of F, hence the model is accepted. It can be concluded that ratio of explained variance

by this model to the unexplained variance is very high. Thus the regression variables are significant in explaining the dependent variable, Service. FDI, Net FII equity, Net FII debt, Import, Export has no influence on service in India as it is not statistically significant as P value is more than 0.001 at 1% level of significance. Coefficient of FDI parameter is 6.55 that tells about dependability of service in country on FDI, if FDI parameter changes by one unit, then service in India will increase by 6.55%. Coefficient of Net FII equity parameter is 2.369 that tells about dependability of service in country on Net FII equity, if Net FII equity parameter changes by one unit, then service in India will increase by 2.369%. Coefficient of Net FII debt parameter is -1.681 that tells about no dependability of service in country on Net FII debt, if Net FII debt parameter changes by one unit, then service in India will decrease by -1.681%. Coefficient of Import parameter is 1.018 that tells about dependability of service in country on Import, if Import parameter changes by one unit, then service in India will increase by 1.018%. Coefficient of Export parameter is 2.968 that tells about dependability of service in country on Export, if export parameter changes by one unit, then service in India will increase by 2.968%.

**Table 5:** India's Industry activity from 2000-2001 to 2011-2012

<i>Year</i>	<i>Industry</i>	<i>FDI</i>	<i>Net FII Equity</i>	<i>Net FII Debt</i>	<i>Import</i>	<i>Export</i>
2000-2001	640043	4029	10206.7	-391.4	44076	49975
2001-2002	656737	6130	8293	659.9	43827	51413
2002-2003	704095	5035	2534.27	338.85	52719	61412
2003-2004	755625	4322	43483.5	5709.84	63843	78149
2004-2005	829783	6051	39346	1878.9	83536	111517
2005-2006	910413	8961	48069.9	-6765.6	103091	149166
2006-2007	1021204	22826	21518.9	5367.11	126414	185735
2007-2008	1119995	34843	51595.3	11771	163132	251654
2008-2009	1169736	41873	-46701	1860.8	185295	303696
2009-2010	1276919	37745	111443	32046.6	178751	288373
2010-2011	1393879	34847	110530	42145.1	251136	369769
2011-2012	1442498	46556	46493.1	50997.3	304624	489181

Table 6

Regression Statistics						
Multiple R	0.995952					
R Square	0.991921					
Adjusted R Square	0.985189					
Standard Error	34858.6					
Observations	12					
ANOVA						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	5	8.95E+11	1.79E+11	147.3356	3.43E-06	
Residual	6	7.29E+09	1.22E+09			
Total	11	9.02E+11				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	513094.7	41983.15	12.22144	1.83E-05	410365.6	615823.7
FDI	6.397605	2.363256	2.707115	0.035241	0.614926	12.18028
Net FII Equity	1.486339	0.354651	4.190994	0.005743	0.61854	2.354138
Net FII Debt	-3.14767	1.451269	-2.16891	0.073172	-6.6988	0.403455
Import	2.95918	2.327061	1.271638	0.250568	-2.73493	8.653293
Export	-0.33387	1.529095	-0.21834	0.834399	-4.07543	3.407694

### Multiple Linear Regression Model

The model obtained is:

$$\text{Services} = 513094.7 + (6.397 \times \text{FDI}) + (1.486 \times \text{Net FII equity}) + (-3.147 \times \text{Net FII debt}) + (2.959 \times \text{Import}) + (-0.333 \times \text{Export})$$

The value of R square in following model is 99.19%, showing that about 99.19% of total variation in Industry in India can be explained by independent variables, like FDI, Net FII equity, Net FII Debt, Import, Export. Since calculated F value is greater than critical value of F, hence the model is accepted. It can be concluded that ratio of explained variance by this model to the unexplained variance is very high. Thus the regression variables are significant in explaining the dependent variable, Industry. Net FII equity has influence on industry in India as it is statistically



significant as P value is less than 0.01 at 1% level of significance. But FDI, Net FII debt, Import, Export has no influence on manufacturing in India as it is not statistically significant as P value is more than 0.001 at 1% level of significance. Coefficient of FDI parameter is 6.397 that tells about dependability of industry in country on FDI, if FDI parameter changes by one unit, then industry activity in India will increase by 6.397%. Coefficient of Net FII equity parameter is 1.486 that tells about dependability of industry in country on Net FII equity, if Net FII equity parameter changes by one unit, then industry activity in India will increase by 1.486%. Coefficient of Net FII debt parameter is -3.147 that tells about no dependability of industry in country on Net FII debt, if Net FII debt parameter changes by one unit, then industry activity in India will decrease by -3.147%. Coefficient of Import parameter is 2.95 that tells about dependability of industry in country on Import, if Import parameter changes by one unit, then industry activity in India will increase by 2.95%. Coefficient of Export parameter is -0.333 that tells about no dependability of industry in country on Export, if Export parameter changes by one unit, then industry activity in India will decrease by -0.333%.

## Conclusion

It was found that the variable which affects the growth of GDP components (Manufacturing, Service, Industry) were FDI, Net FII equity, Net FII debt, Import, Export. The study found a significant affect of FDI, Net FII equity and Import on GDP components. But a significant affect of Net FII debt on GDP components could not be established. And it was also found that there was no significant affect of Export on GDP (Manufacturing, Industry) components but services had a significant affect. In this study, the impact of different macro economic factors on GDP components had been analysed. But for any future policy in designing the GDP components FDI, Net FII equity, Import, Export should also be taken into consideration but Net FII debt should not be taken.

## References

- Alfaro, L. C.-O. (2004). FDI and economic growth: the role of local financial markets. *Journal of International Economics*, 64 (1), 89–112.

- Basu, P. C. (2003). Liberalization, FDI, and Growth in Developing Countries: A Panel Cointegration Approach. *Issue Economic Inquiry*, 41(3), 510–516.
- Chakraborty, C. B. (2002). Foreign direct investment and growth in India: a cointegration approach. *Applied Economics*, 34(9), 1061–1073.
- Chandana, C. (2008). Economic Reforms, FDI, and Economic Growth in India: A Sector Level Analysis. *World Development*, 36(7), 1192–1212.
- Choong, C.-K. Y.-C. (2004). Foreign Direct Investment, Economic Growth, and Financial Sector Development: A Comparative Analysis. *ASEAN Economic Bulletin*, 21(3), 278–28.
- Chowdhury, A. M. FDI and Growth: What Causes What? *The World Economy*, 29(1), 9–19.
- Dasgupta, S.S. (2005). Will Services be the New Engine of Indian Economic Growth? *Development and Change*, 36(6), 1035–1057.
- Elboiashi, H. N. (2002). The causal relationships between Foreign Direct Investment (FDI), Domestic Investment (DI) and Economic Growth (GDP) in North African non-oil producing Countries: Empirical Evidence from Cointegration Analysis. *Advances in Management*, 2(11).
- Griffith, R.R. (2004). Foreign Ownership and Productivity: New Evidence from the Service Sector and the R&D Lab. *Oxford Review of Economic Policy*, 20(3), 440–456.
- Hansen, H. R. (2006). On the Causal Links Between FDI and Growth in Developing Countries. *The World Economy*, 29(1), 21–41.
- Hsiao, F. S.-C. (2006). FDI, exports, and GDP in East and Southeast Asia—Panel data versus time-series causality analyses. *Journal of Asian Economics*, 17(6), 1082–1106.
- Lall, S. N. (2004). Foreign Direct Investment and its Role in Economic Development: Do We Need a New Agenda? *The European Journal of Development Research*, 16(3), 447–464.
- Li, X. (2005). Foreign Direct Investment and Economic Growth: An Increasingly Endogenous Relationship. *World Development*, 33(3), 393–407.
- Liu, X. B. (2002). Relationships between economic growth, foreign direct investment and trade: evidence from China. *Applied Economics*, 34(1), 1433–1440.
- Mohammad, S.S. (1983). Foreign ownership and export performance in the large corporate sector of India. *The Journal of Development Studies*, 20(1), 56–67.
- Ozturk, I.K. (2007). Foreign Direct Investment and Growth: An Empirical Investigation Based on Cross-Country Comparison. *Economia Internazionale*, 60(1), 75–82.
- Picardo, E. (2013, December 12). <http://www.investopedia.com/articles/investing/121213/gdp-and-its-importance.asp>.

- Srinivasan, P. K. (2010). FDI and Economic Growth in the ASEAN Countries: Evidence from Cointegration Approach and Causality Test. *The IUP Journal of Management Research*, 9 (1), 38-63.
- Tang, S. S. (2008). Foreign Direct Investment, Domestic Investment and Economic Growth in China: A Time Series Analysis. *The World Economy*, 31(10), 1292–1309.
- Yao, S. (2006). On economic growth, FDI and exports in China. *Applied Economics*, 38(3), 339-351.
- Zhang, K. (2001). Does foreign direct investment promote economic growth? Evidence from east asia and latin america. *Contemporary Economic Policy*, 19 (2), 175–185.