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## A STUDY ON IMPACT OF FOREIGN DIRECT INVESTMENT ON INDIAN ECONOMY WITH SPECIAL REFERENCE TO INDIAN RAILWAYS

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### Abstract

The Indian economy was closed to the external world before 1991. But after following market-based economic reforms in 1991, India became one of the fastest-growing major economies; it is considered a newly industrialised country now. India opened up the economy in the early nineties following a major crisis of foreign exchange and was close to defaulting on loans. Later on the new policy regime radically pushed forward in favour of a more open and market-oriented economy. The research was conducted to find out the impact of FDI on Indian economy and Indian Railways. The data was collected from past 27 years. The data was secondary and was collected from different research articles, reports, websites, thesis etc. different tools were used like Granger causality effect, VAR model, ARIMA, etc. it was concluded that FDI has a positive effect on both Indian economy and Indian Railways.

*Key Words:* Indian Economy, Indian Railways, Economic Reforms, Foreign Exchange, Granger Causality Effect, VAR model, ARIMA.

## Introduction

Indian economy is the world's seventh-largest by nominal GDP and third-largest by purchasing power parity (PPP) **IMF (2017)**. Global FDI inflows rose by 9 per cent to USD 1.6 trillion in 2014, USD 1.75 trillion in 2015 and will raise to USD 1.8 trillion in 2016 (**UNCTAD Report 2014**). India's FDI inflows have increased 26 per cent in 2014 reaching \$47 billion which was \$35 billion in 2008 and \$35.6 billion in 2009 with maximum growth in service sector, despite macroeconomic uncertainties and financial risks according to an **UNCTAD Report**. That is much faster than the rest of developing Asia, which saw a growth of about 15 per cent across 40 economies. **Prof. John P. Lewis** has pointed out, "that almost every developed country of the world in its developing stage had made the use of foreign capital to make up the deficiency of domestic savings". So in such situation India cannot be an exception to this. So, after allowing foreign direct investment in India, the country bagged 9<sup>th</sup> place in the year 2016 on Foreign direct investment confidence index (**A.T. Kearney foreign direct investment confidence index, 2016**), a survey conducted by a US consultancy firm A.T. Kearney on more than 300 executives from 28 countries.

International Economic Integration plays a vital role in Economic Development of any country and Foreign Direct Investment is one and the only major instrument of attracting International Economic Integration in any economy **Jasbir, Sumita, Anupama (2012)**. The pre-economic liberalisation period was challenging for the Indian economy to grow because there were many constraints to overcome **Hira & Sandeep (2014)**. But later globalisation and liberalisation brought lots of new innovative products to the world, Foreign Direct Investment is the one among them **Hameedu Shahul (2014)**. Globalisation of any economy means integration with the world economy and is the expansion of economic activities across political boundaries of the nation's **Jangir Babita (2014)**. A typical characteristic of developing and underdeveloped economies is the fact that these economies do not have the needed level of savings and income in order to meet the required level of investment needed to sustain the growth of the economy **Anitha R. (2012)**. Hence in this preview of privatisation, Indian government is leaving no stone unturned in its attempt to attract greater FDI flows into India **Bedi Priyanka and Kharbanda Ekta (2014)**.

### The Transport Sector in India

The transport system in India comprises distinct modes such as rail, road transport, coastal shipping, civil aviation, inland water transport and pipelines. Rail and road dominate, carrying about 87 percent of the total freight traffic in the country in 2007-08, Planning Commission of India (2013). India's transport network is one of the most extensive in the world. The share of the transport sector in overall infrastructure investments has increased from 2 percent of GDP during 1995-99 to an average of 2.6 percent of GDP between 2007 and 2011. India's transport system, comprises of 3.31 million kilometres (km) of roads, 63,465 km of rail, 12 major and 187 minor ports, 11 major international airports, 89 domestic airports, and 14,500 km of navigable inland waterways.

The Indian Railways owns and operates one of the largest rail networks in the world, covering more than 63,140 route km. In 2013–14, IR carried 8.425 billion passengers annually or more than 23 million passengers daily (roughly half of which were suburban passengers) and 1050.18 million tons of freight in the year. In 2005, the performance of the Indian Railways improved with financial net revenues increasing from \$1.4 billion in 2004–2005 to \$1.76 billion in 2005–2006. India has 13 major and 199 minor and intermediate ports along its more than 7500 km long coastline. India's seaborne foreign trade being 95% by volume and 67% by value, the ports play a very significant role in improving foreign trade in a growing economy. These ports serve the country's growing foreign trade in petroleum products, iron ore, and coal, as well as the increasing movement of containers.

Indian Railways is considered the lifeline of the nation. The Railway functions as a vertically integrated organization which provides passenger and freight services to the nation. It traverses the length and breadth of the country providing the required connectivity and integration among different regions for balanced regional development. It covers 29 states and 3 union Territories across almost 8,500 stations-from Baramulla in the North to Kanyakumari in the South and from Naliya in the West to Ledo in the East. Indian railways span the country a **capita ad calcem**. In short we can say it is an integral part of every Indian's wellbeing. It is considered as one of the pillars of the nation (**Ministry of Railways, June 2015**). During 2013-14, Indian Railways carried 1.05 billion tonnes of revenue earning freight traffic and is expected to carry 1.1 billion tonnes in 2014-15 (**Ministry of Indian Railways**). The following table 1 shows the growth and share of railways and other modes of transport.

Table 1:  
Share and growth of India's transportation sector (at factor cost)

Year	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Railways	0.9	0.9	1	0.9	0.9	0.8	0.7
	7.5	11.1	9.8	7.7	8.8	5.9	7.5
Transport by other means	5.7	5.7	5.6	5.5	5.3	5.3	5.4
	9.3	9	8.7	5.3	7.3	8.2	8.6

Source: Central Statistical Organisation

**Simon (1996)** defines privatisation as “the transfer of ownership of economic enterprises from the state to the private sector”. **Loxton (2005)** added that government should involve private players in rail operations through concession and public-private partnerships. But the government of India is vague about the privatisation issues. Further adding it is found from the contemporary literature reviewed on FDI that FDI firms are better performers than Non-FDI firms in international economics. (**P.D. Jeromi, 2002**).

## Review of literature related to impact of GDP on Indian Economy

**Harikrishna V. (2015)** finds that with the initiation of globalization, developing countries, particularly those in Asia, have been witnessing a 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. **Mandal Pankaj Kumar (2016)** in his research paper “Make in India and Recent Trend of FDI

Inflow” says Indian government has taken diverse activities to pull in FDI inflow in which one is Make in India initiative. Yet at the same time investors inclined more towards service sector. He has concentrated on the inflow of FDI in India and says India needs a lot more FDI to develop the economy.

### **Review of Literature Related to Effect of FDI On Railway sector**

**Bhati Sonam et al (2014)** Foreign Direct Investment is allowed in almost all the sectors, FDI has finally found its way into Railway sector as well. The sector which was Public is on way to work on a Public Private Partnership model. With foreign capital inflows there will be technological change, which will help India to have new technologies and as economy opens up it brings best management practices from all over the world, would definitely increase number of people using trains and that will increase revenue. **Eduard Alvarez, Dan Bogart, Max Satchell, Leigh Shaw-Taylor , and Xuesheng You (2016)** in their research article have examined the effects of railways on local employment growth and structural change. They have found out that greater access to the local railway stations have increased local employment growth, decreased the share of occupations in agriculture and has increased the share of services. they have found out that the effects of this on an average were very less on secondary employment. **Morgan Stanley report (2014)** the report reveals that Indian rail network is spread over a wide area, with 64,015 route km (113,115 running track km) and about 7,000 stations. After the US, Russian, and Chinese railways, India’s is now the fourth-largest railway system in the world. However, the financial performance of Indian railways has been on steady deterioration in the 11<sup>th</sup> five-year plan and also during the ongoing 12<sup>th</sup> five-year plan. The lack of surplus generated has constrained investments required to meet the requirements of the economy. The 12<sup>th</sup> five-year plan envisages to prioritize investments in key areas such as Dedicated Freight Corridors, high capacity rolling stock, last mile rail linkages and port connectivity.

### **Research Gap**

After the extensive review of published literature pertaining to foreign direct investment(FDI) in India and especially in Indian railways, it was found out that foreign direct investment (FDI) has a great impact on Indian economy as well as Indian railways. The literature review contains ample and valuable information which made the ground work for the present study. The study on foreign direct investment (FDI) in Indian railways is a new topic and yet no extensive research has been conducted on the impact of foreign direct investment (FDI) on Indian Railways. Hence this research is undertaken to find the impact of foreign direct investment (FDI) on Indian Railways.

### **Statement of problem**

The railways are facing a cutthroat competition from other modes of transport especially roadways and their share in total passenger and freight traffic conveyed in the country is declining. Competition from road and air transport has adversely affected the market share of railways in the transportation industry because it is unable to provide the required amenities to the passengers. The road transporters have an advantage over railways that they can price on the basis of capacity that their product can bear.

Keeping in view these backdrops, there is ample scope and need for research to explore the need of foreign direct investment (FDI), its impact on railways and the financial performance of Indian railways.

## Objectives:

1. To study the impact of FDI on Indian economy and Indian Railways.
2. To analyse the year-wise and sector-wise trend in FDI inflows in India.
3. To ascertain the key issues and financial performance of Indian railways for the study period.

## Hypothesis:

H<sub>01</sub>: Lagged GDP does not Granger cause FDI and FDI does not Granger Cause GDP.

H<sub>11</sub>: Lagged GDP does Granger cause FDI and FDI does Granger Cause GDP.

H<sub>02</sub>: There is no correlation between dividend paid by Indian railways and operating ratio.

H<sub>22</sub>: There is a correlation between dividend paid by Indian railways and operating ratio.

H<sub>03</sub>: Total revenue of Indian railways does not Granger cause FDI and FDI does not Granger cause Total revenue on Indian railways.

H<sub>33</sub>: Total revenue of Indian railways does Granger cause FDI and FDI does Granger cause Total revenue on Indian railways.

## Research Methodology

To examine the foreign direct investment (FDI) policy changes in the post-reform period, the descriptive approach was adopted. To find the stationarity or unit root square in the data, Vector Auto Regressive model and (ADF) test. Granger Casualty Effect has also been used in this research.

To examine the foreign direct investment (FDI) trends and forecast FDI inflow, ARIMA model was adopted. To analyse the pattern of foreign direct investment (FDI) inflows at the country level, Regression Model was adopted to see whether there is any change in the pattern of foreign direct investment (FDI) in the post liberalisation period.

## Data analysis tools

For the analysis purpose, the researcher has adopted both conventional and advanced tools. The data collected from different secondary sources was entered into excel and was later imported to SPSS for multiple regression purpose. For further analysis, STATA<sub>14</sub> was used for most of the analysis like for finding stationarity or unit root or heteroscedasticity and Granger Causality effect. Further Gretl was used for OLS and ARIMA to forecast the FDI inflow in Indian railways.

## Data Analysis:

H<sub>01</sub>: Lagged GDP does not Granger cause FDI and FDI does not Granger Cause GDP.

H<sub>11</sub>: Lagged GDP does Granger cause FDI and FDI does Granger Cause GDP.

Table:2

**Granger Causality effect**

Granger Causality Tests		Sample: 1991 : 2017		
Lags: 1				Status
Null Hypothesis:	Obs	F-Statistic	Probability	
GDP does not Granger cause FDI	26	15.933	0.0005	REJECT
FDI does not Granger Cause GDP		3.9475	0.0590	ACCEPT
Lags: 2				
Null Hypothesis:	Obs	F-Statistic	Probability	
GDP does not Granger cause FDI	23	8.0742	0.0027	REJECT
FDI does not Granger Cause GDP		3.2390	0.0594	ACCEPT
Lags: 3				
Null Hypothesis:	Obs	F-Statistic	Probability	
GDP does not Granger cause FDI	16	8.9249	0.0008	REJECT
FDI does not Granger Cause GDP		2.5347	0.0007	REJECT

*Significant at 5% level of significance.*

*Interpretation:* The causality among the two variables change in GDP and total country-wise FDI inflow is ascertained by Granger Causality effect. It was hypothesized that lagged total country-wise FDI inflow does not granger cause change in GDP and vice versa. In the first lag, the p value is less than the significance level (0.05), hence the null hypothesis is rejected and accept the alternate hypothesis and can conclude that lagged GDP Granger Cause country-wise FDI inflow. But at lag 1, the p value is greater than the significance level (0.05), hence the null hypothesis cannot be rejected and hence it can be concluded that lagged country-wise FDI inflow does not Granger cause GDP. At lag 2, we reject the null hypothesis of GDP does not Granger cause

H<sub>02</sub>: There is no correlation between dividend paid by Indian railways and operating ratio.

H<sub>22</sub>: There is a correlation between dividend paid by Indian railways and operating ratio.

Table:3

**OLS, using observations 1991-2017 (T = 27)****Dependent variable: Total Dividend Payment Rs Crores**

	Coefficient	Std. Error	t-ratio	p-value	
const	4069.19	174.030	23.38	0.0001	**
operatingratio	1.00000	0.0610596	16.38	0.0001	**
Mean dependent var	4069.185		S.D. dependent var	3036.810	
Sum squared resid	20443435		S.E. of regression	904.2883	
R-squared	0.914740		Adjusted R-squared	0.911330	
F(1, 25)	268.2207		P-value(F)	7.09e-15	
Log-likelihood	-221.0654		Akaike criterion	446.1307	
Schwarz criterion	448.7224		Hannan-Quinn	446.9014	
rho	0.677800		Durbin-Watson	0.643890	

\*\* significant at 0.05 level of significance.

*Interpretation:* From the above table, it is clear that R<sup>2</sup> is signifying a strong relationship between total dividend payment Rs crores and operating ratio. R-square value is 0.9147 which means 91.47 per cent change in total dividend payment Rs crores can be explained by operating ratio. Also from the table it is evident that that p-value is also less than the significance level and hence we can conclude there is a correlation between total dividend payment Rs crores and operating ratio.

$H_{03}$ : Total revenue of Indian railways does not Granger cause FDI and FDI does not Granger cause Total revenue on Indian railways.

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Table:4  
**Granger Causality Tests between Revenue of Indian railways and total of FDI**

Granger Causality Tests		Sample: 1991 : 2017		
Lags: 1				Status
Null Hypothesis:	Obs	F-Statistic	Probability	
Revenue of Indian railways does not Granger cause FDI	26	514.9101	0.000	REJECT
FDI does not Granger Cause Revenue of Indian railways		4.0557	0.055	ACCEPT
Lags: 2				
Null Hypothesis:	Obs	F-Statistic	Probability	
Revenue of Indian railways does not Granger cause FDI	25	8.0742	0.0027	REJECT
FDI does not Granger Cause Revenue of Indian railways		237.92	0.000	REJECT

*Interpretation:* The causality among the two variables total Revenue of Indian railways and FDI in railway related components is ascertained by Granger Causality effect. It was hypothesized that lagged total Revenue of Indian railways does not granger cause FDI in railway related components and vice versa. In the first lag, the p-value is less than the significance level (0.05), hence the null hypothesis is rejected and accept the alternate hypothesis and can conclude that lagged total Revenue of Indian Railways Cause FDI in railway related components. But for the hypothesis FDI does not Granger Cause Revenue of Indian railways at lag 1, the p-value is greater than the significance level (0.05), hence the null hypothesis cannot be rejected and hence it can be concluded that lagged FDI does not Granger Cause Revenue of Indian railways. At lag 2, we reject both the null hypotheses of lagged total Revenue of Indian railways does not Granger cause FDI in railway related components and FDI does not Granger Cause Revenue of Indian railways as the p-value is less than the critical value (0.05) and hence accept the alternative hypotheses that lagged total Revenue of Indian railways does Granger cause FDI in railway related components and FDI does Granger Cause Revenue of Indian railways.

Table:5  
**For 95% confidence intervals,  $z(0.025) = 1.96$   
ARIMA, using observations (T = 20)  
Dependent variable: Year Total FDI**

	Coefficient	Std. Error	z	p-value	
const	39458.8	36879.6	1.070	0.2846	
phi_1	-0.687409	0.206309	-3.332	0.0009	**
theta_1	-1.00000	0.164178	-6.091	0.0001	**
Mean dependent var	-231406.9		S.D. dependent var		3152904
Mean of innovations	-413539.9		S.D. of innovations		1486448
Log-likelihood	-299.3060		Akaike criterion		606.6121
Schwarz criterion	610.3898		Hannan-Quinn		607.2514
		Real	Imaginary	Modulus	Frequency
AR					
	Root 1	-1.4547	0.0000	1.4547	0.5000
MA					
	Root 1	1.0000	0.0000	1.0000	0.0000

\*\* significant at 0.05 level of significance.

For 95% confidence intervals,  $z(0.025) = 1.96$

	yeartotafdi_d2	prediction	std. error	95% interval	
2008	-303092.	-160642.			
2009	92367.8	408581.			
2010	177586.	300902.			
2011	-139023.	61044.0			
2012		362217.	1.48645e+06	-2.55117e+06	3.27560e+06
2013		-182408.	2.91562e+06	-5.89692e+06	5.53210e+06
2014		191972.	3.38728e+06	-6.44698e+06	6.83092e+06
2015		-65380.4	3.58865e+06	-7.09901e+06	6.96825e+06
2016		111526.	3.67998e+06	-7.10110e+06	7.32415e+06
2017		-10081.0	3.72235e+06	-7.30576e+06	7.28560e+06
2018		73513.2	3.74221e+06	-7.26108e+06	7.40811e+06
2019		16049.7	3.75155e+06	-7.33686e+06	7.36896e+06
2020		55550.7	3.75596e+06	-7.30600e+06	7.41710e+06
2021		28397.3	3.75804e+06	-7.33723e+06	7.39403e+06
2022		47062.8	3.75903e+06	-7.32049e+06	7.41462e+06
2023		34231.9	3.75949e+06	-7.33424e+06	7.40270e+06
2024		43052.0	3.75971e+06	-7.32585e+06	7.41195e+06
2025		36989.0	3.75981e+06	-7.33211e+06	7.40609e+06
2026		41156.8	3.75986e+06	-7.32804e+06	7.41035e+06
2027		38291.8	3.75989e+06	-7.33095e+06	7.40753e+06
2028		40261.2	3.75990e+06	-7.32900e+06	7.40952e+06
2029		38907.4	3.75990e+06	-7.33037e+06	7.40818e+06
2030		39838.0	3.75991e+06	-7.32944e+06	7.40912e+06
2031		39198.3	3.75991e+06	-7.33008e+06	7.40848e+06
2032		39638.1	3.75991e+06	-7.32964e+06	7.40892e+06
2033		39335.8	3.75991e+06	-7.32995e+06	7.40862e+06
2034		39543.6	3.75991e+06	-7.32974e+06	7.40883e+06
2035		39400.7	3.75991e+06	-7.32988e+06	7.40868e+06
2036		39498.9	3.75991e+06	-7.32978e+06	7.40878e+06
2037		39431.4	3.75991e+06	-7.32985e+06	7.40871e+06

*Interpretation:* The above table shows the forecasted values of year-wise FDI from different countries in India. The ADF test is conducted to find the d value for ARIMA (p,d,q) where d value was found to be 0 and p and q value were estimated to be 1 from correlogram. After estimating these values, ARIMA (1,0,1) was run for forecasting the value for next 19 years. From the model, it was seen that the value of year-wise FDI shows a positive growth.

### Findings of the Study:

1. Total dividend payment in Rs crores (total dividend payment in Rs crores) and operating ratio (operating ratio) has a strong relationship.
2. At lag 2, the alternative hypothesis is accepted as the p-value is less than the critical value (0.05) and hence it is concluded that lagged total Revenue of Indian railways does Granger cause FDI in railway related components and FDI does Granger Cause Revenue of Indian railways.
3. After estimating p,d,q values, ARIMA (1,0,1) was run for forecasting the value for next 19 years. From the model, it was seen that the value of year-wise FDI shows a positive growth.

### Suggestions:

1. As from the analysis, it was found out that change in GDP attracts FDI from different countries, so there is a need to improve GDP growth rate by encouraging the domestic production.
2. There should be reduction in the expenses on the Indian railways as the operating ratio is very high as observed from the data calculated by the researcher. If the operating ratio comes down, the revenue will itself go up. Subsidy given to different sections should be scrapped, speed of trains should be increased as there is surge in the passenger demands.
3. FDI policy should be more liberalised in Indian railways. It was found out from the analysis that there is a strong correlation between FDI in railway related components and dividend payment. More the



FDI, more is the revenue and hence more dividend payment.

4. Total Revenue of Indian railways does Granger cause FDI in railway related components and FDI does Granger Cause Revenue of Indian railways hence the researcher can suggest that the expenses should come down as it is a financial indicator for performance of Indian railways to the investors.
5. The forecasted value indicates that there is a positive growth in the country-wise FDI inflow in India. Hence the Indian government should take different policy measures to make FDI inflow convenient for the investors.

## Conclusions

There is a rationale to welcome inflow of foreign direct investment (FDI) because it enables to achieve the cherished goals like making favourable the balance of payment, rapid economic development, reduction of poverty and disparity in the development. In the concluding words, it was analysed that the performance of FDI in Indian economy through examining country-wise and sector wise is favourable. In case of railways, operating ratio, revenue from both passenger and freight trains, dividend paid, etc. are the main determinants for attracting private players to invest in Indian railways. In short the financial indicators of Indian Railways act as the main attracting factors for the private players because a strong relationship was observed among these financial indicators and FDI inflow in railway related components, also the Granger causality effect was found out among these variables with FDI inflow. Last but not the least, government need to pay heed to attract to improve the health of Indian railways which is caught in underinvestment.

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