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FOREIGN DIRECT INVESTMENT AND ECONOMIC GROWTH IN INDIA: A CO INTEGRATION ANALYSIS

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ABSTRACT:-

The aim of this study is to explore the causality relationship between Foreign Direct Investment and economic growth in India, which has liberalized foreign capital inflows especially after 1991. Co integration and Granger Causality analysis has been used in order to test the hypotheses about the presence of causality and co integration between Foreign Direct Investment and Economic Growth in India for the time period 1991-92 to 2014-15. The empirical analysis shows that there is two way causality between FDI and economic Growth in case of India.

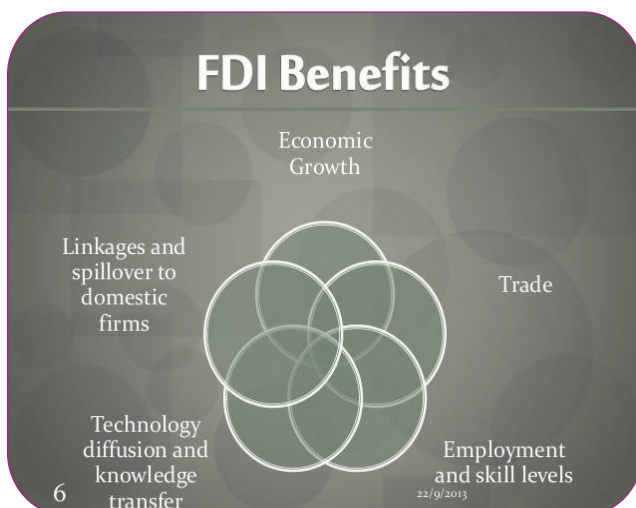
KEYWORDS: Foreign Direct Investment, Economic Growth, Granger Causality Analysis.

INTRODUCTION

The role of FDI in the growth process has been a burning topic of debate in several countries including India. Foreign Direct Investment (FDI) which is a vital ingredient of the globalization efforts of the world economy plays a pivotal role in the process of economic development particularly in the capital scarce country, where the domestic base of created assets like technology, skills and entrepreneurship are quite limited. It provides financial resources for investment in a host country and thereby augments domestic saving efforts. It also plays an important role in accelerating the pace of economic growth. FDI provides the much needed foreign exchange to help the bridge the balance of payment or trade deficit. FDI brings complementary assets such as technology, management and organizational competencies and there are spillover effects of these assets on the rest of the economy. FDI is treated as a main engine of economic growth and technological development which provides

ample opportunities in accelerating economic development. In developing countries, there has been a remarkable shift in attitude towards FDI. Capital flows in the form of FDI have been widely believed to be an important source of economic growth in recent years. Soon after the independence, India embarked on a strategy of industrialization with active Government intervention. Domestic enterprises accumulated considerable capacity in this process which has influenced not only the pattern of inward FDI in the country in the subsequent period but has also led to investments made by Indian enterprises abroad. This change in Government policy had also an important bearing on the FDI position of India.

In response to macro-economic instability, the



sweeping structural reforms were brought in by the Government of India in 1991. These liberalization measures embodied in the 'New Economic Policy' were followed in later years by a series of measures further liberalizing the inward-looking policy regime towards FDI. Since 1991, a virtual sea change has taken place in the economic policy framework in India. The new economic policy is giving importance to privatization, liberalization and globalization with a definite view to make the Indian economy progressively market oriented and integrating it with the emerging global economic structure.

FDI has played a significant role in the growth and development of world economy particularly in the developing countries like India because it links the host economy with the globalised market and foster's economic growth. Inflow and outflow remarkably increased in the past few decades all over the world. But to India it is a new phenomenon which came with the wake of economic reforms in 1991. It is not like that before this no foreign investment came to India, but they came in some other forms like debt, loan, borrowing, institutional investment etc. Since 1985, this situation has been changed in favor of FDI. Some studies (Kumar, 1998; Sena and Pan, 2004) revealed that India has sought to increase inflows of FDI with a much liberal policy since 1990 after four decades of cautious attitude to it. One of the objectives of the current reforms of the policies is to remove impediments for export- oriented manufacture in general and to attract MNEs to locate efficiency seeking FDI in the country. In a developing country like India that seeks FDI as a development resource, the focus of the FDI policy should be on maximization of the magnitude of inflows by itself. While in general it is admitted that host Government's policies may play an important role in extracting the benefits for development. The present paper has been divided into four sections. Section-I provides a brief summary of literature review. Section-II discusses the trends in FDI in Indian economy for the period 1991-92 to 2014-15. Section-III deals with methodology. Section-IV analyzes the empirical results. The main conclusions emerging out of the study are presented in section-V.

SECTION – I

SURVEY OF LITERATURE:-

In the literature on link between Foreign Direct Investment (FDI) and economic growth De Mello (1999) attempts to find support for an FDI-led growth hypothesis when

Time series analysis and panel data estimation for a sample of 32 OECD and non- OECD countries covering the period 1970-1990 were made. He estimates the impact of FDI on capital accumulation and output growth in the recipient economy. Carkovic and Levine (2002) find no significant positive impact from FDI and GDP growth rate. Chakraborty and Basu (2002) examine the causality between FDI and output growth in India. Utilizing annual data from 1974-1996, they find that the real GDP in India is not Granger-caused by FDI and the causality runs more from real GDP to FDI. Khor Chia Boon (2001) analyzed the causal relationship between FDI and economic growth in case of Malaysia. The findings of the study reveal that bidirectional causality exists, between FDI and economic growth in Malaysia i.e. while growth in GDP attracts FDI, FDI also contributes to increase in output. FDI has played a key role in the diversification of Malaysian economy.

John Andreas (2004) discusses the potential of FDI inflows to affect host country economic growth. The study argues that FDI should have a positive effect on economic growth as a result of technology spillovers and physical capital inflows. Performing both Cross-section and panel data analysis on a dataset of 90 countries during the period 1980 to 2002, the empirical part of the study finds that FDI inflows enhance economic growth in developing countries but not in developed economies.

Thai Tri Do (2005) analyzed the impact of FDI on Vietnamese economy by using partial adjustment model and time series data running from 1976 to 2004. FDI is shown to have not only short run but also long run effect on GDP of Vietnam.

Emrah Bilgic (2006) examined the possible causal relationship between FDI and economic growth in Turkey. The study finds out that there is neither a long-run nor a short-run effect of FDI on economic growth of Turkey. Thus the study could not find any patterns for each hypothesis of "FDI led growth" and "Growth driven FDI" in Turkey.

Sarabpriya (2012) analyzed the causal relationship between FDI and economic growth in India using the

co integration approach for the period, 1990-91 to 2010-11. The co integration test confirmed an existence of long run equilibrium relationship between the two as confirmed by the Johansen co integration test results. The Granger Causality test finally confirmed the presence of uni-directional causality which runs from economic growth to Foreign Direct Investment.

SECTION – II

FOREIGN DIRECT INVESTMENT IN INDIA SINCE 1991:-

India has introduced many policy reforms to attract FDI since independence. Changes in policy framework in India dealing with FDI inflows could be studied in four phases:-

1. First phase (1950-1967): Cautious Welcome Attitude towards FDI.
2. Second Phase (1968-1980): Restrictive Attitude towards FDI.
3. Third phase (1981-1990): Period of Gradual Liberalization of FDI Regulations.
4. Fourth Phase 1991 onwards: A Paradigm Shift (Open Door Policy)

With the adoption of the industrial policy statement in July 1991, there has been a paradigm shift in the approach, thrust and direction of FDI policy. One of the objectives of industrial policy statement was that “Foreign investment and technology collaboration would be welcomed to obtain higher technology, to increase exports and to expand the production base.” The industrial policy statement of 1991 has followed an ‘open door’ policy on foreign investment and technology transfer. Transparency and openness have been the most significant features of FDI in this period. During this phase, favorable policy environment consisting of liberalization policies on foreign investment, foreign technology collaborations, foreign trade and foreign exchange have been exerting positive influence on foreign firm’s decisions on investment and business operations in the country.

Many concessions were announced for foreign equity capital in 1992-93. Existing companies were allowed to raise foreign equity capital up to 51 percent subject to certain prescribed guidelines. FERA (1973) has been replaced with Foreign Exchange Management Act (FEMA) in 1999, which became effective from June 1, 2000. The most significant change brought in by FEMA is that foreign exchange law violators would no longer be treated as criminals but as civil offenders. The Government has permitted, except for a small negative list, access to the automatic route for FDI. Companies with more than 40 percent of foreign equity are now treated at par with Indian owned companies. New sectors such as mining, banking, telecommunications, highways, construction, airports, hotel and tourism, courier services and management have been thrown up for FDI. Even the defense industry is opened up to 100 percent for Indian private sector participation with 26 percent FDI, subject to licensing. In the present liberalized FDI policy, it is not necessary that FDI is accompanied by foreign technology agreements. Liberal approach has been followed towards investment by Non-Resident Indians (NRI’s).

RECENT INITIATIVES TO ATTRACT FOREIGN DIRECT INVESTMENT:-

In pursuance of Government’s commitment to further facilitate Indian industry, Government has permitted access to FDI through automatic route, except for a small negative list. Latest revisions to further liberalize the FDI regime are as follows:-

1. Increase in the FDI limits in air transport services (domestic airlines) up to 49 percent through automatic route and up to 100 percent by Non-Resident Indians (NRIs) through automatic routes.
2. New proposals for foreign investment/technical collaborations would henceforth be allowed under the automatic route, subject to the sectoral policies as per the following guidelines:-
 - a) Prior approval of the Government would be required only in cases where the foreign investor has an existing joint venture for technology transfer/trade mark agreement in the ‘same’ field.
 - b) Even in the above mentioned cases, the approval of Government would not be required in respect of the following:-
 - i) Investments to be made by venture capital funds registered with SEBI.
 - ii) Where the existing joint venture investments by either of the parties is less than 3 percent.

iii) Where the existing venture/ collaboration is defunct or sick.

3. FDI in the banking sector has been further liberalized by raising FDI limit in private sector banks to 74 percent under the automatic route including investment by Foreign Institutional Investors (FIIS). The aggregate foreign investment in a private bank from all sources will be the maximum for 74 percent of the paid up capital of the bank and at all times, at least 26 percent of the paid up capital held by residents except in regard to a wholly owned subsidiary of a private bank.

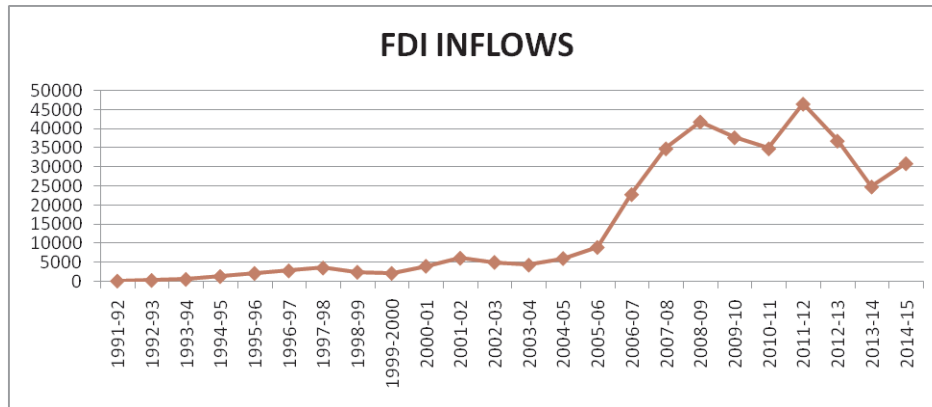
4. FDI ceiling in telecom sector in certain services (such as basic, Public Mobile Radio Trunked Services (PMRTS), Global Mobile Personal Communication Service (GMPCS) and other value added services), was increased from 49 percent to 74 percent.

TABLE:-1 TRENDS IN FDI INFLOWS IN INDIA (1991-92 TO 2013-14):-

YEAR	FDI INFLOWS (US\$ Million)	Annual Growth Rate
1991-92	129	-
1992-93	315	144.18%
1993-94	586	86.03%
1994-95	1314	55.40%
1995-96	2144	63.16%
1996-97	2821	31.57%
1997-98	3557	26.09%
1998-99	2462	-30.78%
1999-2000	2155	-12.46%
2000-01	4029	86.96%
2001-02	6130	52.14%
2002-03	5035	-17.86%
2003-04	4322	-14.16%
2004-05	6051	40.04%
2005-06	8961	48.09%
2006-07	22826	154.72%
2007-08	34843	52.64%
2008-09	41873	20.17%
2009-10	37745	-9.85%
2010-11	34847	-7.67%
2011-12	46556	33.60%
2012-13	36860	-20.82%
2013-14	24824	-32.65%
2014-15	30931	24.60%

SOURCE: SIA Newsletter(Various Issues) & Author’s calculation.

FIG:-1 TRENDS IN FDI INFLOWS IN INDIA (1991-92 TO 2014-15):-



The above table and chart shows that during the initial phase of post liberalization period i.e., from 1991 to 1998, there was continuous increase in the FDI inflows. The total amount of the FDI inflows during the period 1991-92 to 1997-98 had amounted to US\$10,868 million. The increase was largely due to the expanded list of industries or sectors which were opened up for foreign equity participation. This was followed by relaxation of various rules, regulations and introduction of various policies by the government to promote the FDI inflows. FDI inflows declined to the level of US\$2,462

Million in the year 1998-99 and further to US\$2,155 million in 1999-2000. The reasons for the declining trend of FDI inflows were due to various set of factors. Firstly, the most important factor was the several restrictions imposed on India by the USA on account of the nuclear test carried out by India at Pokhran. The second factor was the slowdown of the Indian economy due to the mild recession in US and global economy. The third one was about unfavorable external economic factors such as the financial crisis of South-East Asia. Fourthly, the decline was due to the political instability and the poor domestic industrial environment. In 2002-03, FDI inflows were declined to US\$ 5035. They were also reduced to US\$4322 during 2003-04. This fall in flow of FDI into the country was due to the Global economic recession. Then, from 2004-05 onwards, there has been steady increase in the flow of FDI into the country with highest annual growth rate which has reached 154.72 percent during 2006-07. After 2008-09 growth rates are found to be negative except the year 2011-12. It may be due to economic crisis.

SECTION – III

ECONOMETRIC METHODOLOGY:-

The present research study aims to test the empirical relation between Foreign Direct Investment (FDI) and economic growth in Indian economy using the natural logarithms of FDI and GDP for the time period 1991-92 to 2014-15.

STATIONARY AND ORDER OF INTEGRATION:-

In order to avoid spurious regression, we need to distinguish the stationary of the series. By doing so, we ensure the validity of the usual test statistics (t-statistics and F-statistics and R²). Stationary could be achieved by appropriate differencing and this appropriate number of differencing is called order of integration. The standard Augmented Dickey Fuller (ADF) [Dickey and Fuller 1979] Unit root tests have been used to check the stationary of the series.

AUGUMENTED DICKY FULLER TEST:-

The Augmented Dickey Fuller (ADF) test is preferred as most of the studies have adopted it to examine

the Unit root in the series FDI and GDP. In case of Dickey-Fuller test, there may create a problem of Autocorrelation. To tackle the problem of Autocorrelation problem, Dickey Fuller has developed a test called Augmented Dickey Fuller (ADF) test. ADF Unit Root test are based on following three models:-

1. With Constant (Intercept):-

$$\Delta Y_t = b_0 + \alpha Y_{t-1} + \sum_{i=1}^m \beta_i Y_{t-i} + e_t$$

2. With Constant and Trend:-

$$\Delta Y_t = b_0 + b_1 t + \alpha Y_{t-1} + \sum_{i=1}^m \beta_i Y_{t-i} + e_t$$

3. Without Constant and Trend:-

$$\Delta Y_t = \alpha Y_{t-1} + \sum_{i=1}^m \beta_i Y_{t-i} + e_t$$

HYPOTHESIS:-

Null Hypothesis $\Rightarrow H_0: \delta = 0$ (Series is not stationary or got unit root)

Alternative Hypothesis $\Rightarrow H_1: \delta < 0$ (Series is stationary or no unit root problem).

If the computed absolute value of the tau statistics (τ) exceeds the ADF or Mackinnon critical values, we reject the hypothesis that $\delta = 0$, in which case the time series is stationary. On the other hand, if computed absolute value of the tau statistic (τ) does not exceed the critical tau value, we do not reject the null hypothesis, in which case the time series is non-stationary.

COINTEGRATION TEST:-

Once the unit roots are confirmed for data series, the next step is to examine whether there exists a long-run equilibrium relationship among the variables. This calls for co integration analysis which is significant so as to avoid the risk of spurious regression. In this stage, the Johansen (1988) co integration test is used to identify a co integrating relationship among the variables. In this study, Johansen test was used to assess the co integration of the interest variables. For Johansen test there are two types of testing i.e. Trace Test and Maximum Eigen value Test.

GRANGER – CAUSALITY TEST:-

This test is based on the Granger (1969) approach to the question of whether X causes Y. Granger proposed to know how much of the current value of Y can be explained by the past values of Y and then to find out whether adding lagged values of X can improve the explanation. The direction of causality determines the direction of the relationship among variables and Granger causality test has three different directions for these purposes: In case of one way causality, in a single equation model, Y is the dependent variable and X independent. Here, there is a causality relationship from X towards Y ($X \rightarrow Y$). Independent variable is the cause and causes a one-way effect on dependent variable, which shows the presence of one-way causality and the relationship is determined as ($Y \rightarrow X$) whereas in two-way causality, There can be a reciprocal effect between the variables. If there is no relationship among variables, this implies the absence of causality. Granger's causality test is carried out by using the following equations:-

$$Y_t = \sum_{i=1}^m a_i Y_{t-i} + \sum_{j=1}^m b_j X_{t-j} + u_{1t} \quad (1)$$

$$X_t = \sum_{i=1}^m c_i X_{t-i} + \sum_{j=1}^m d_j Y_{t-j} + u_{2t} \quad (2)$$

The above equation (1) shows a causality relationship from X to Y, and the equation (2) from Y to X. For

the model presented above, Granger causality test is carried out as

$H_0: B = 0$ and $H_1: B \neq 0$ When H_0 hypothesis is accepted, X is not the cause of Y. If H_1 hypothesis is accepted X is the cause of Y. If both hypotheses are rejected, this means there is a two-way causality between X and Y.

SECTION – IV EMPIRICAL RESULTS AND DISCUSSION:-

The time series data of Foreign Direct Investment (FDI) and Gross Domestic Product (GDP) over the period 1991-92 to 2013-14 are used to investigate the causal relationship between FDI and economic growth. The study depends on secondary data which has been collected from different sources such as: Economic Survey (various issues), SIA Newsletter (various issues) etc. Our empirical discussion starts from descriptive statistics. The results are given in following table 2:

TABLE 2:- DESCRIPTIVE STATISTICAL ANALYSIS

VARAIBLE	In (GDP)	In (FDI)
Mean	13.41	8.634348
Median	13.05000	8.520000
Maximum	15.82000	10.74000
Minimum	12.31000	4.860000
Std. Deviation	0.937159	1.648701
Skewness	1.080246	-0.481528
Kurtosis	3.393599	2.553348
Jarque - Bera	4.621705	1.080019
Probability	0.099177	0.582743
Observations	23	23

Source: Author's Calculation

A fundamental task in many statistical analyses is to characterize the location and variability of a data set. A further characterization of the data includes skewness and kurtosis. Skewness is a measure of symmetry, or more precisely, the lack of symmetry. A distribution, or data set, is symmetric if it looks the same to the left and right of the center point. Kurtosis is a measure of whether the data are peaked or flat relative to a normal distribution. That is, data sets with high kurtosis tend to have a distinct peak near the mean, decline rather rapidly, and have heavy tails. Data sets with low kurtosis tend to have a flat top near the mean rather than a sharp peak. A uniform distribution would be the extreme case. This definition is used so that the standard normal distribution has a kurtosis of zero. In addition, with the second definition positive kurtosis indicates a "peaked" distribution and negative kurtosis indicates a "flat" distribution. The results given in the above table (2) specify that average of FDI in our sample data is around 13 and of GDP is 9. Minimum and maximum values of FDI are found to be less as compared to GDP. Rate of deviation of GDP is lowest at 0.937159 and that of FDI is the highest at 1.648701, which shows data of FDI much variation or dispersion from the average exists. The J-B statistics shows that all variables used in the analysis have a log normal distribution. The results show that skewness of GDP is found to be positive which indicates that data are skewed right whereas skewness of FDI is found to be negative. By Skewed right we mean that right tail is long relative to the left tail. The value of Kurtosis is found to be

positive in case of both the variables which indicate a peaked distribution.

TABLE:-3 AUGUMENTED DICKY FULLER UNIT TEST RESULTS

VARIABLE	WITH CONSTANT	WITH CONSTANT & TREND	NONE
FDI	-4.334219**	-4.717321**	-4.279292**
CRITICAL VALUES			
1% level	-3.831511	-4.532598	-2.692358
5% level	-3.029970	-3.673616	-1.960171
GDP	4.573983**	-4.540062**	-2.780069**
CRITICAL VALUES			
1% level	-3.769597	-4.571559	-2.708094
5% level	-3.004861	-3.690814	-1.962813

*** & ** denotes significance at 1% and 5% level of significance.**

The lag length was determined using Schwartz Information Criteria (SIC)

The above table (3) shows that series belonging to FDI and GDP is not stationary in level value. It becomes stationary only when first difference is taken. The table further reveals that as the calculated ADF statistics exceed the tabulated critical values at 1% and 5% level of significance, therefore we reject the null hypothesis of unit root and non-stationary and conclude that variable is stationary only at the first difference. Strong evidence emerges that all the time series are I (1) at the 1% and 5% Level of significance. In the next step, the co integration between the stationary variables has been tested by Johansen's Trace and Maximum Eigen value tests. The results of these tests are shown in Table 4:-

TABLE:-4 JOHANSEN COINTEGRATION TEST RESULTS

Hypothesized Number of Co integrating Equations	Eigen Value	Trace Statistics	Critical Value at 5% (p-value)	Maximum Eigen statistics	Critical Value at 5% (p-value)
None*	0.533919	18.10905	15.49471 (0.0197)	16.03130	14.26460 (0.0260)
At Most 1	0.094204	2.077754	3.841466 (0.1495)	2.077754	3.841466 (0.1495)

Source: Author's own Calculation

*** denotes rejection of the hypothesis at the 0.05 level**

The above table (4) shows that first hypothesis i.e. No co integration among variables can be rejected as p-value (1.97%) is less than the critical value (15.49%) at 5% level of significance on the basis of trace statistics. The second Null hypothesis i.e. there is at most one co integrating equation. We can't reject the second null hypothesis because p-value (14.95%) is more than the critical value (3.84%) at 5% level of significance, rather we accept the second null hypothesis i.e. there is at least one co integrating equation. Our two variables FDI and GDP are co integrated i.e. both the variables have long run association between them. And the Maximum Eigen test statistics makes the confirmation of this result.

GRANGER CAUSALITY:-

The purpose of Granger Causality analysis is to test whether FDI Granger causes economic growth (GDP) or GDP Granger Causes FDI. The results of Granger test done for 2 Time lags between the two variables for which unit root test is carried out are shown in the following table (5):-

TABLE:-5 GRANGER CAUSALITY FOR THE PERIOD 1991-92 TO 2013-14

Pair wise Granger Causality Tests			
Sample: 1991-92 TO 2014-15			
Lags 4			
Null Hypothesis	F-statistics	Probability	Decision
FDI does not Granger Cause GDP	6.85981*	0.0063	Reject
GDP does not Granger cause FDI	17.4393*	0.0002	Reject

The results of the Granger causality tests show that it can be rejected that FDI does not Granger causes GDP at the 5% level (F-statistic is 6.85981, p-value is 0.63%), and it also can be rejected that GDP does not Granger cause FDI (F-statistic is 17.4393, p-value is 0.02%) as the probability value is less than the calculated value of F-statistics. Therefore, it can be concluded that there is a two-way causality between GDP and FDI which shows that FDI Granger causes economic growth (GDP) and economic growth Granger causes FDI.

SECTION –V**CONCLUSIONS:-**

This study examines the direction of the relationship between economic growth rate and FDIs by using Granger causality test. According to the results of the study, there is two way causality relationships between economic growth and FDIs in India for the period 1991-92 to 2014-15 and long-run relationship between FDI and GDP according to the Johansen co integration test. There has been a generous flow of FDI in India since 1991 and its overall direction remained the same over the years irrespective of the ruling party. Foreign Direct Investment (FDI) inflows have gone up significantly in post-reform era undoubtedly due to radical changes in the policies that have increased the confidence of the investors. Lastly, it can be concluded that FDI has significantly contributed to economic growth of Indian economy during post-reform era

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