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LPG: AN APRON STRING TO INDIA'S EVOLUTION TOWARDS FOREIGN DIRECT INVESTMENT

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Abstract

Liberalization, Privatization, and Globalization (LPG) – unique to this approach; a magic towards this method offers the consumers and sellers to make many choices over several products, and also attracts Foreign Direct Investment(FDI) from various countries and supports as well as urge the nation on the road to the path of progress. Whereas the investors demand profit and the outcome end with pollution. Henceforth, it turns out to be a necessitated thought to study the three decades of ruling policy which favors both the investing and the receiving countries in the globe.After shedding light on the problem, the intention of the study delves on India's FDI net inflows with the rest of the world, GDP growth and to predict the outlook of the manufacturing industrial sectors of the nation, and the study copes to explore about the growth of exports of India with selected economies namely People's Republic of China (PRC), Newly Industrialized Economies (NIEs) such as South Korea, Taiwan, Singapore, and Hong Kong and economies of the Association of Southeast Asian Nations-5(ASEAN-5) like Indonesia, Malaysia, Philippines, Singapore, and Thailand.World Bank data, Asian Development Outlookdatabase

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(ADO), Regional offices of RBI, and other government open data sources were used in this study.In particular, this study employs time series forecasting technique to predict the outlook of manufacturing industrial sector. The results of the study show a drastic relation between the inflows, growth and nation's position with other emerging economies.

Keywords: Foreign Direct Investment, PRC, NIEs, and ASEAN-5, Gross Domestic Product.

1. Introduction: Globalization paves a way to the wanders to roam the zoo and it serves as the opening door to the rest of the world. Moreover, it allowed the traders and the industrialists of many nations to move their goods around the globe thatsequentially results in killing two birds with one stone. According to David Ricardo, countries meet up with the trade of goods with relative advantage. On the other hand, Heckscher-Ohlin (H-O) looks it as abundance makes decision neither absolute nor comparative does. As well the wealthy nation seeks out the resourced one for business creation was the cost reduction happens and cause trickle-down effect in the economies. Hence, the capital flow between nations and control of proprietorship in a business by an investor are mentioned as Foreign Direct Investment (FDI). But Stephen Hymer had other ideas by disapproving the neoclassical economist and mentioned that, FDI isn't a shift of capitals from a nation to other but it's the power over a business or industry with a specific intention inside numerous nations. In contrast, Activists scream against the impact on the ecological cycle and the stress levied on the environment (Environment News Press Centre, 2018). As ET bureau mentioned a decade before, 'there is a fortuitous prospect avail for India to overtake Japan and become the third-largest economy on purchasing power parity' (Devika Banerji, Rishi Shah – Economic Times, 2012) and now India captures the third position. Moreover, the easy liquidity financial system is hovering business situation-confidence and attracting foreign investment from several nations. Henceforth, it's a worthwhile idea to look after, India's FDI net inflows with the rest of the world, GDP growth and to predict the business situation of the manufacturing industrial sectors of the nation. Subsequently, the study copes to explore

about the growth of exports and production of industries of India with selected economies namely People's Republic of China (PRC), Newly Industrialized Economies (NIEs) such as South Korea, Taiwan, Singapore, and Hong Kong and economies of the Association of Southeast Asian Nations-5(ASEAN-5) like Indonesia, Malaysia, Philippines, Singapore, and Thailand.

2. Methods and Materials: This studyemployed time-series forecasting technique to predict the business situation/confidence in the manufacturing industries of India and the results were processed with Excel sheets. Simultaneously the study incorporated a log-linear regression model to estimate the relationship between FDI Net Inflows and GDP of India using E-views software.

2.1. Process of Timeseries Forecasting: The researchers used the following steps in Time series Forecastingtechniqueto analyze and predict the situations of the same.

In the course of the enquiry, average played an important role, as the average makes the elimination of randomness from the data by providing smooth trend-cycle ingredient. Each value of MA (4) is the Moving Average for four quarters namely Q1, Q2, Q3, and Q4. To investigate this statistically, moving average is applied again to moving average by the name of 'centered moving average'.

$$\text{That is, CMA – Centered moving average} = \left[\frac{MA_1+MA_2}{\text{Number of observations}(2)}\right].$$

The data is then analyzed from different points of view such as, S_t and I_t, where S_t stands for seasonalities and I_t for irregularities present in the data. To remove this effect and to derive, the actual data is divided with the centered moving average.

$$\frac{Y_t}{CMA}$$, where Y_t = actual data/incorporated business information.

S_t – Smoothing effect is applied to remove the noise and to capture the important patterns. Statistical analysis was performed using by averaging the quarterly values for the corresponding annuals.

$$S_t - \left| \begin{array}{l} \text{Average } [\text{CMA}(Q_{1,\,2016}, Q_{1,\,2017}, Q_{1,\,2018})] \\ \text{Average } [\text{CMA}(Q_{2,\,2016}, Q_{2,\,2017}, Q_{2,\,2018})] \\ \text{Average } [\text{CMA}(Q_{3,\,2016}, Q_{3,\,2017}, Q_{3,\,2018})] \end{array} \right|$$

Similarly, $D_t$is obtained through estimated smoothing values.

$$\text{Deseasonalize} = \left[\frac{Y_t}{\text{Smoothing}_t} \right] \qquad (\because Y_t = \text{Actual data})$$

Using a simple linear regression model $\hat{Y} = \hat{\beta}_o + \hat{\beta}_1 t$ coefficient values are gained and used for further investigation. Likewise, $\hat{T} = \hat{\beta}_o + \hat{\beta}_1 t$, is used, as keeping Trend (T_t) as the response variable and time (t) as the outcome variable.

Therefore, $\hat{T}$ = Intercept + Coefficient value (t) * t. Where t = 1,2,3……..., 20. At last, the values replaced with the division that is, smoothing by trend values bestow forecasted values.

3. Results and Discussion

3.1. India's FDI net inflows with the rest of the world

As Helen to the Troy, Mauritius, a tiny island with 12.4 lakhs population contributes to the 30.8 percent (49053.52 million $) of FDI net inflows into India. Succeeding to that, Singapore stood up second position for moving 25.95 per cent (41325.24 million $) of its funds as an investment to India. As inverse to Mauritius, Cyprus island with 11.7 lakhs population contributes to 1.34 percent (2126.85 million $) of India's FDInet inflows. This scenario has been illustrated with a table cum graph method.

Table 1

India's Foreign Investment Inflows (in US Million $):

Name of the Country	Percentage of Inflows	FDI Inflows (in $)
Cyprus	1.34	1.34
France	1.48	1.48
UAE	1.93	1.93
Germany	2.72	2.72
United Kingdom	2.94	2.94
U. S. A	6.59	6.59
Japan	6.92	6.92
Netherlands	7.69	7.69
Singapore	25.95	25.95
Mauritius	30.8	30.8

Source:Foreign direct investment, net inflows (% of GDP), World Bank database.

Table 2 lightens on the comparison between India and the rest of the world concerning FDI netinflows. Between the year 1990 to 1999 India latch on to 0.86 (1998) per cent of inflows as the highest and, in the interim of globalization policy signed, the inflow hit the ground with the all-time low of 0.03 (1991) per cent. Despite, in the succeeding decade (2000 to 2009), India experienced to attract the neighbouring countries with its abundant labour force and natural resources. As a matter of fact, India perceived 2.65 per cent whereas the rest barely received 2.25 per cent. By lowering the tax rates and offering subsidies, India broken the barriers for the international investors and passed the rest with 0.15 per cent difference raise in 2018. This has been illustrated with a line graph below.

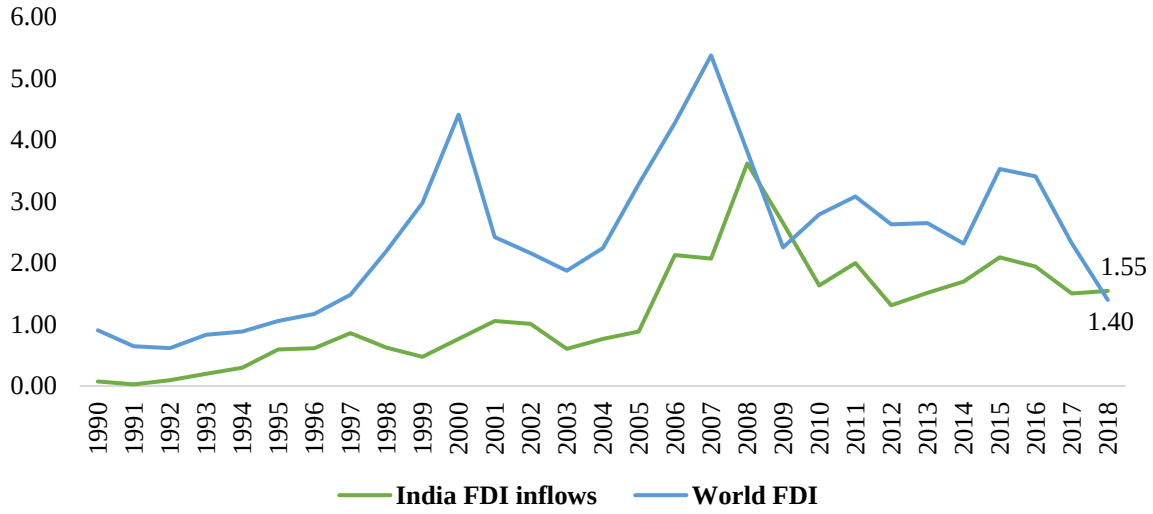
Table 2

India Vs. World – FDI Net Inflows (in US$ Million)

Year	1990 - 1999		2000-2009		2010-2018	
Classification	India	World	India	World	India	World
1	0.07	0.91	0.77	4.41	1.64	2.79
2	0.03	0.65	1.06	2.42	2.00	3.08
3	0.10	0.62	1.01	2.16	1.31	2.63
4	0.20	0.83	0.61	1.88	1.52	2.65
5	0.30	0.89	0.77	2.24	1.70	2.32
6	0.59	1.06	0.89	3.29	2.09	3.53
7	0.62	1.17	2.13	4.28	1.94	3.41

8	0.86	1.48	2.07	5.38	1.51	2.32
9	0.63	2.19	3.62	3.82	1.55	1.40
10	0.47	2.98	2.65	2.25	-	-

Source: Foreign direct investment, net inflows (% of GDP), World Bank database.



3.2. FDInet inflows, Rate of Employment and GDP of India

In the year 2018, Service sector and computer sector procure 16.78 percent and 11.31 percent as foreign direct investment from the total. Additionally, FDI net inflows have a direct relationship with the growth of GDP and the level of employment. That is, when there is an increase in the netinflows, then the level of unemployment reduced drastically with increasing GDP ratio [Inflow-2.65: GDP -7.86: Unemployment -2.5 (2009)].

Table 3

FDInet inflows, Rate of Employment and GDP growth rate of India (in percentage)

Year	Unemployment	Inflows	GDP	Year	Unemployment	Inflows	GDP
1991	2.4	0.03	1.06	2005	3.1	0.89	7.92
1992	2.4	0.10	5.48	2006	2.7	2.13	8.06
1993	2.6	0.20	4.75	2007	2.4	2.07	7.66
1994	2.6	0.30	6.66	2008	2.3	3.62	3.09
1995	2.6	0.59	7.57	2009	2.5	2.65	7.86
1996	2.7	0.62	7.55	2010	2.4	1.64	8.50
1997	2.6	0.86	4.05	2011	2.5	2.00	5.24
1998	2.7	0.63	6.18	2012	2.7	1.31	5.46

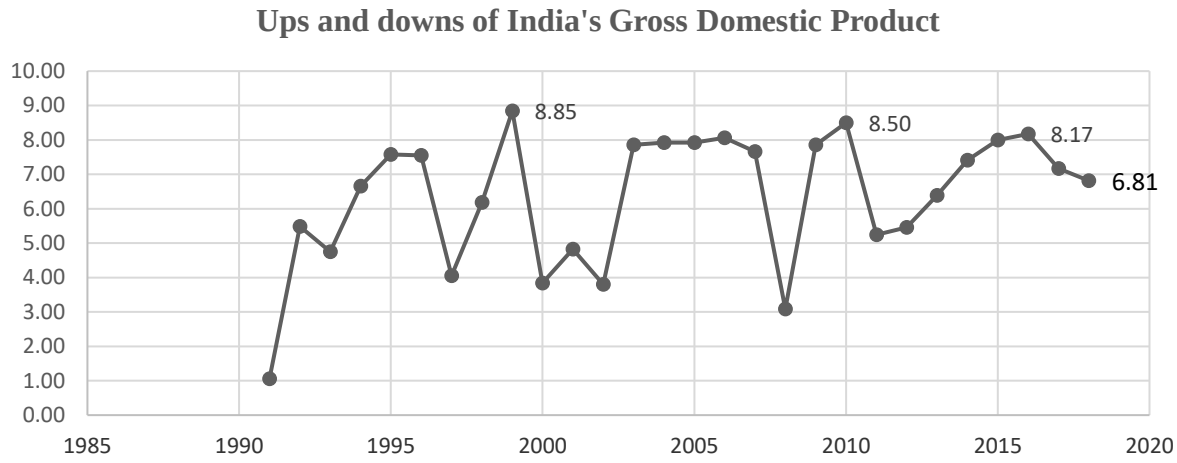
1999	2.7	0.47	8.85	2013	2.8	1.52	6.39
2000	2.7	0.77	3.84	2014	2.8	1.70	7.41
2001	2.9	1.06	4.82	2015	2.8	2.09	8.00
2002	3.1	1.01	3.80	2016	2.7	1.94	8.17
2003	3.2	0.61	7.86	2017	2.6	1.51	7.17
2004	3.1	0.77	7.92	2018	2.6	1.55	6.81

Source:Data retrieved from:Foreign direct investment, net inflows (% of GDP), World Bank database.

The values of Gross Domestic Product and the Foreign Direct Investment Net Inflows are then tested with the log-linear regression model. The model is stated as,

$$\boldsymbol{LnGDP\ growth\ rate_t = \beta_o + \beta_1\ LnFDI\ net\ inflows_t + \varepsilon_t}$$

Where, Ln GDP - the logarithmic value of GDP of India, Ln FDI net inflows - logarithmic value of FDI net inflows of India for the period of 27 years from 1991 to 2018 and εt is the error term. The results of regression are tied well to a similar study (Tamilselvan. M, Manikandan. S: 2015). The overall influence of FDI net inflows is significant [F (1,27) = 9.58, n=28]. Slightly, 27 per cent of the variation in the FDI net inflows and GDP is explained by the model. In addition, the inflows of FDI into the nation significantly influence the GDP of India ($t_{(28)}$ = 3.09). The value of outcome variable's coefficient describes that, one dollar increase in the inflow increases the GDP by 0.2 per cent. Henceforth, the results make easy to extract the existence of a direct relationship between the outcome and response variables incorporated in the model.



3.3. Forecasting Analysis of Business Confidence with Timeseries Forecasting Technique

The fourth table deals with the prediction of the outlook of manufacturing industrial sectors (business situation/confidence) of India. Based on probability, the acceptance of prediction occurs. In this case, the predicted values show very less deviation with fewer outlier values. After removing seasonalities and irregularities in the data, smoothing has been done before deseasonalizing. As time kept as the outcome variable and deseasonalized values of the actual data as the response variables, regression has done. With the coefficient value of intercept and the outcome variable, trend from the values are removed and then forecasted values are obtained. Additionally, through graphical representation it has been shown, to be exact, ascent (upward trend) represents growth.

Table 4

Prediction of Business confidence with Timeseries forecasting technique

t	Year	Quarter	Business situation	S_t	D_t	T_t	Forecast
1	2016	1	30.5	1.07	28.47	30.04	28.04
2		2	33.5	0.99	33.78	30.73	30.99
3		3	31.3	1.04	30.08	31.42	30.19
4		4	27.9	0.95	29.45	32.11	33.89
5	2017	1	36.0	1.07	33.60	32.79	30.61
6		2	33.7	0.99	33.98	33.48	33.76
7		3	36.9	1.04	35.46	34.17	32.83
8		4	36.1	0.95	38.10	34.85	36.79

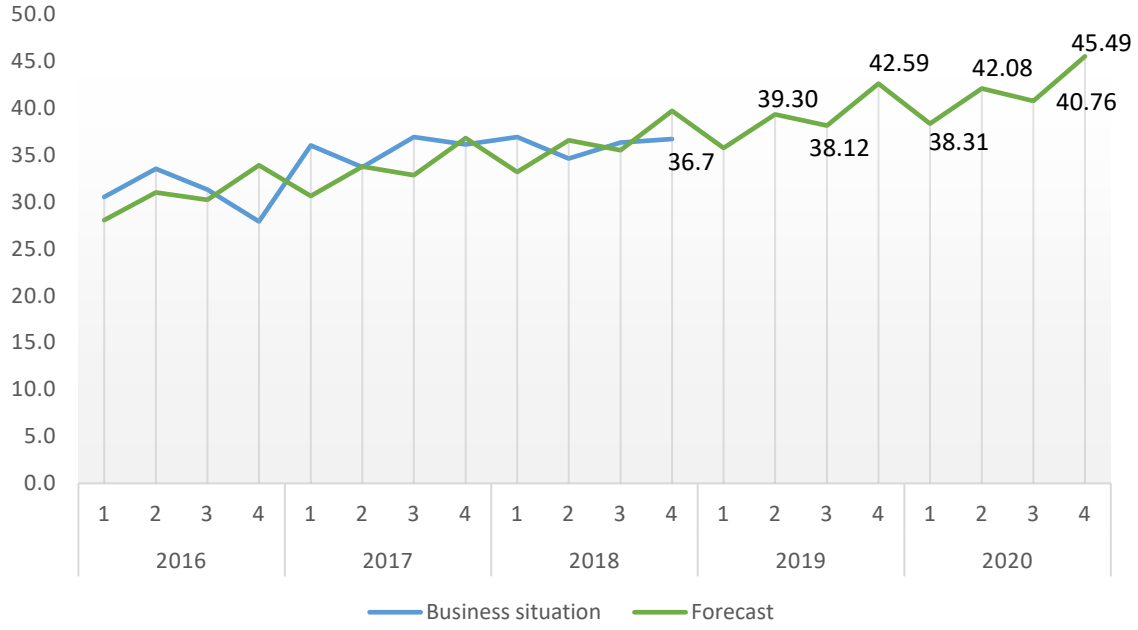
9	2018	1	36.9	1.07	34.44	35.54	33.18
10		2	34.6	0.99	34.89	36.23	36.53
11		3	36.3	1.04	34.88	36.92	35.48
12		4	36.7	0.95	38.74	37.60	39.69
13	2019	1	-	1.07	-	38.29	**35.74**
14		2	-	0.99	-	38.98	**39.30**
15		3	-	1.04	-	39.66	**38.12**
16		4	-	0.95	-	40.35	**42.59**
17	2020	1	-	1.07	-	41.04	**38.31**
18		2	-	0.99	-	41.73	**42.08**
19		3	-	1.04	-	42.41	**40.76**
20		4	-	0.95	-	43.10	**45.49**

Source: Computed data.

Note: i). Business Situation (2016-18) retrieved from Asian Development Outlook database.

ii). t – time period, S_t – Smoothing, T_t – Time trend and D_t– Deseasonalize

iii). 1,2,3,4 represents Quarter 1, Quarter 2,Quarter 3 and Quarter 4.



3.4. Comparative Analysis on the Growth of Exports with Selected Economies

A popular tale on fluctuation is that in the long run, it is inevitable. It is important to highlight the fact that it is a common scenario in the trade cycle too. A non-negotiable law elucidates that, rise after a fall as a remarkable achievement. According to this quote, India expands its exports and bounce

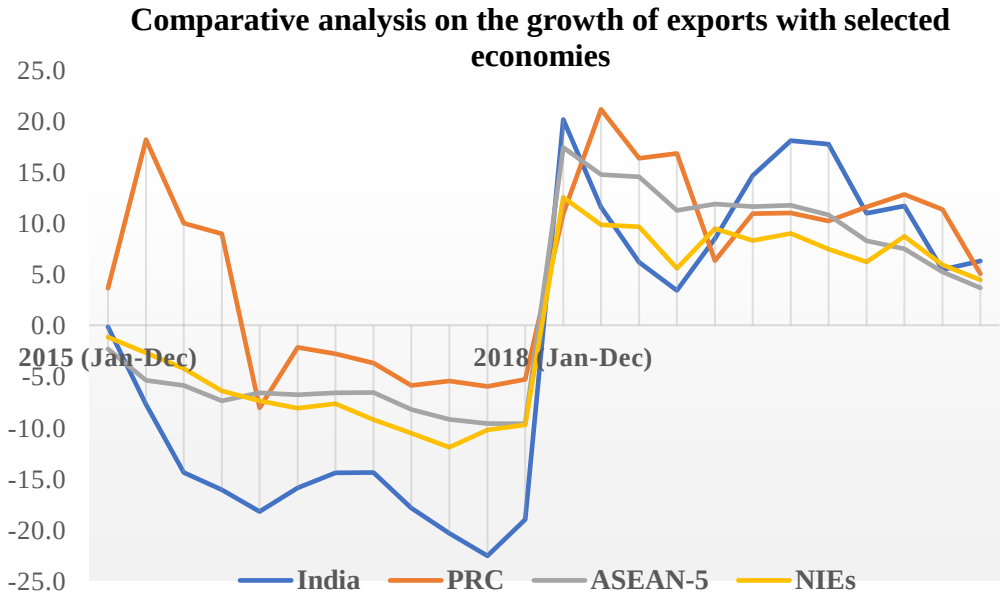
back more than that of China, NIEs and ASEAN-5 markets. As corresponded to Dec 2015 and 2018, India quickens its export and altered its negative score from -19.0 per cent to 6.3. And as of high, India increased its export up to 20.1 per cent than that all the other selected economies. The changing cyclic pattern of India, PRC, NIEs and ASEAN-5 has shown with a chart.

Table 5

Comparative analysis on the growth of exports with selected economies (2015 & 2018)

2015	India	PRC	ASEAN-5	NIEs	2018	India	PRC	ASEAN-5	NIEs
	-0.2	3.6	-2.3	-1.2		20.1	10.9	17.4	12.5
Q1	-7.7	18.2	-5.4	-2.7	**Q1**	11.5	21.1	14.7	9.8
	-14.4	10	-5.9	-4.2		6.2	16.3	14.5	9.6
	-16.1	8.9	-7.4	-6.4		3.4	16.8	11.2	5.6
Q2	-18.2	-8.1	-6.6	-7.4	**Q2**	8.5	6.3	11.9	9.4
	-15.9	-2.2	-6.8	-8.1		14.6	10.9	11.6	8.3
	-14.4	-2.8	-6.6	-7.7		18.1	11	11.7	9
Q3	-14.4	-3.7	-6.6	-9.2	**Q3**	17.7	10.2	10.8	7.4
	-17.9	-5.9	-8.2	-10.6		11	11.6	8.3	6.2
	-20.3	-5.5	-9.2	-11.9		11.7	12.8	7.5	8.7
Q4	-22.6	-6	-9.6	-10.2	**Q4**	5.5	11.3	5.2	5.9
	-19	-5.3	-9.6	-9.8		6.3	5	3.7	4.4

Source:CEIC Data Company (accessed Mar 19), Asian Development Outlook Database.



4. Conclusion

The results demonstrate three things. First, the forecasted results intimate, for the year 2020, second quarter grabs a raise with a fall from 38.3 (Q1) per cent to 42.1 (Q2) and in the fourth quarter (Q4) business situation/confidence had better-risen up to 45.5 per cent. Second, over threedecades, external investment is growing gradually and it is proportionately associated with the employment. But FDI inflows grow in company with the rising unemployment rate. With the scenario of India and other rising economies, it happens because of diversion of FDI from labour oriented activities to technological and service sector works (finance, Banking, Insurance, R & D, Technology, Testing and Analysis and other), it lessens the job opportunities to the residents of this realm. Thirdly, the results cast new light on the growth over gross domestic product (GDP); the deviation of capital stocks to harmless evolution shields these surroundings and sustainably drives the day. The main inference that can be drawn from the words of Prof. Leontief is that India is a labour-intensive country, diverging the production towards capital-oriented goods may pull-back the growth with doubling values for the necessities. The present verdict further validates, there is no such thing as free lunch (Milton Friedman, 1975), the increasing inflows result inincreasing dependency and increasing exploitation of sources and direct to repay the opportunity cost as what we had done, that we nevermore going to own (Joshua Kennon, Nov. 2019). Social efficiency (someone better-off; no one worse-off) may be hard but it needs to be taken into concern for sustainable advancement.

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For interested readers index has been provided.

Table 1: Double log-linear model results

Model used for estimation: Ln GDP = $\beta_o + \beta_t$ Ln FDI Net Inflows + ε_t

Dependent Variable: LNGDP
Method: Least Squares
Date: 01/22/20 Time: 22:26
Sample: 1991 2018
Included observations: 28

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.808992	0.073218	24.70680	0.0000
LNFDI	0.220158	0.071147	3.094411	0.0047

R-squared	0.269157	Mean dependent var	1.780219
Adjusted R-squared	0.241048	S.D. dependent var	0.441125
S.E. of regression	0.384298	Akaike info criterion	0.993954

Sum squared resid	3.839817	Schwarz criterion	1.089112
Log likelihood	-11.91536	Hannan-Quinn criter.	1.023045
F-statistic	9.575377	Durbin-Watson stat	1.847738
Prob(F-statistic)	0.004674		

Source: Computed data, E-views

Table 2: Log values employed for regression analysis:

Year	***Ln FDI net inflows***	***Ln GDP***	***Year***	***Ln FDI net inflows***	***Ln GDP***
1991	-3.50656	0.058269	2005	-0.11653	2.069391
1992	-2.30259	1.701105	2006	0.756122	2.086914
1993	-1.60944	1.558145	2007	0.727549	2.036012
1994	-1.20397	1.896119	2008	1.286474	1.128171
1995	-0.52763	2.024193	2009	0.97456	2.061787
1996	-0.47804	2.021548	2010	0.494696	2.140066
1997	-0.15082	1.398717	2011	0.693147	1.656321
1998	-0.46204	1.821318	2012	0.270027	1.697449
1999	-0.75502	2.180417	2013	0.41871	1.854734
2000	-0.26136	1.345472	2014	0.530628	2.00283
2001	0.058269	1.572774	2015	0.737164	2.079442
2002	0.00995	1.335001	2016	0.662688	2.100469
2003	-0.4943	2.061787	2017	0.41211	1.969906
2004	-0.26136	2.069391	2018	0.438255	1.918392

Source: Reserve Bank of India.

Table 3: Timeseries Forecasting model

t	***Year***	***Quarter***	***Business situation***	***MA (4)***	***CMA***	***St, It***	***St***	***Deseasonalized values***	***Tt***	***Forecast***
1	2016	1	30.5	-	-		1.07	28.47	30.04	28.04
2		2	33.5	-	-		0.99	33.78	30.73	30.99
3		3	31.3	30.8	30.8	1.02	1.04	30.08	31.42	30.19
4		4	27.9	32.2	31.5	0.89	0.95	29.45	32.11	33.89
5	2017	1	36.0	32.2	32.2	1.12	1.07	33.60	32.79	30.61
6		2	33.7	33.6	32.9	1.02	0.99	33.98	33.48	33.76
7		3	36.9	35.7	34.7	1.06	1.04	35.46	34.17	32.83
8		4	36.1	35.9	35.8	1.01	0.95	38.10	34.85	36.79
9	2018	1	36.9	36.1	36.0	1.02	1.07	34.44	35.54	33.18
10		2	34.6	36.0	36.1	0.96	0.99	34.89	36.23	36.53
11		3	36.3	36.1			1.04	34.88	36.92	35.48
12		4	36.7	-	-		0.95	38.74	37.60	39.69
13	2019	1	-	-	-		1.07	-	38.29	35.74
14		2	-	-	-		0.99	-	38.98	39.30
15		3	-	-	-		1.04	-	39.66	38.12
16		4	-	-	-		0.95	-	40.35	42.59
17	2020	1	-	-	-		1.07	-	41.04	38.31

18	2	-	-	-	0.99	-	41.73	42.08
19	3	-	-	-	1.04	-	42.41	40.76
20	4	-	-	-	0.95	-	43.10	45.49[3]

Source: Computed data – Excel sheet, Business situation data are retrieved from Asian development outlook database.

Note:MA(m) = Moving Average of order m, CMA = Centered Moving Average, S_t, I_t = Seasonality for time t and Irregularity for period t, S_t = Smoothing effect for time period t, T_t = Trend of time t.

[3]Timeseries forecasting modelling in excel (JalayerAcademy): "https://www.youtube.com/watch?v=gHdYEZA50KE"