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Impact of Indias Current Account Deficit and National Debt on Its Foreign Exchange Rate (vs. Us$):A Study of India from 1990-2018

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Abstract: ***The Current Account Deficit and National Debt of a country are two major factors that can impact the foreign exchange rates it has with the currencies of other nations. This study empirically analyses the impact of India's Current Account Deficit (in million USD) and National Debt (in million USD) on the nation's Foreign Exchange Rate (vs.US$).***
The Current Account is the balance of trade between a country and its trading partners, reflecting all payments between countries for goods, services, interest, and dividends. A deficit in the current account shows that the value of the goods and services it imports exceeds the value of the products it exports. In other words, the country requires more foreign currency than it receives through sales of exports, and it supplies more of its owncurrency than foreigners demand for its products. The excess demand for foreign currency lowers the country's exchange rate (exchange rate depreciation).
Thus the model presents a negative or inverse relation between Current Account Deficitand its impact on the Foreign Exchange Rate. Government debt is public debt or national debt owned by the central government. A country with increasing government debt is less likely to acquire foreign capital, leadingto inflation. Foreign investors will sell their bonds in the open market if the market predicts government debt within a certain country. As a result, a decrease in the value ofits exchange rate will follow.

ACKNOWLEDGMENTS
I take this opportunity to thank everyone who has helped me in the completion of thispaper.
It would have been impossible to complete this without the helpful guidance, consistentcooperation and tremendous support of my Econometrics professor, Mrs Reshmi Ganguly. Last but not the least, I extend a vote of thanks to all those who gave me their invaluableencouragement, support and guidance at various phases of this paper, including my friends and classmates.

I. INTRODUCTION

A current account deficit is a trade measurement that says a country imported more goods, services, and capital than it exported. A nation creates a current account deficitwhen it relies on foreigners for the capital to invest and spend. Depending on why thecountry is running the deficit, it could be a positive sign of growth. It could also be a negative sign that the country is a credit risk.
In the short-run, a current account deficit is helpful to the borrowing nation. Foreigners are willing to pump capital into it. That drives economic growth beyond what the countrycould manage on its own. In the long run, a current account deficit saps economic vitality. Foreign investors may start to question whether the country's economic growth will provide enough return on their investment. Demand weakens for the country's assets,including the country's government bonds.
As foreign investors withdraw funds, bond yields rise. The national currency loses value relative to other currencies. That lowers the value of the assets in the foreign investors' strengthening currency. It further depresses investor demand for the country's assets. Thiscan lead to a tipping point where investors will dump the assets at any price. A country with a current account deficit should invest the foreign capital it receives wisely. It should build roads and ports, and educate its workforce, to boost internationaltrade. The country's leaders should create a current account surplus as soon as possible.They should improve domestic productivity and the competitiveness of its local businesses. It should also seek to reduce imports of basic necessities, such as oil and food, by boosting that ability at home. In the short run, National debt is a good way for countries to get extra funds to invest in their economic growth. National debt is a safe way for foreigners to invest in a country'sgrowth by buying government bonds.
When used correctly, National debt improves the standard of living in a country. It allowsthe government to build new roads and bridges, improve education and job training, and provide pensions. This spurs citizens to spend more now instead of saving for retirement. This spending by private citizens further boosts economic growth.
The testing has been done using Ordinary Least Squares Method under Classical LinearRegression Model.

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II. LITERATURE REVIEW

Mirchandani, A. (2013), analysed various macroeconomic variables that leads to the variation of the foreign exchange rate. The various factors included inflation; interest rate, current account deficit and the variation of these factors were observed to correlate with the variation in foreign exchange rate.

Khera, K., et al; (2015), observed the effect of various macroeconomic factors influencing the exchange rate post globalization. The study suggested to condenseimports and to promote FDI to improve the exchange rate.

Wan Mohd Yaseer Mohd Abdoh, et al., (2016), compared the relationship of exports,interest rate and inflation on exchange rate of select ASEAN countries. They observed that exports had a significant role on the exchange rate movement.

Vidyavathi, B., et al; (2016), evaluated the leading macroeconomic indicators that influenced the exchange rate. They observed negative relationship GDP and exchangerate, inflation & exchange rate, interest rate and exchange rate, external debt and exchange rate, and a weak positive relationship between FDI and Exchange rate.

The Current Account Deficit and National Debt are some of the most vitals factors to consider when determining a country's Foreign exchange Rate, which is precisely whythese indicators was chosen as the independent variables.

III. DEPENDENT VARIABLE – FOREIGN EXCHANGE RATE(INR PER USD) (Y)

A foreign exchange rate is the price of the domestic currency stated in terms of another currency. In other words, a foreign exchange rate compares one currency with another toshow their relative values. Since standardized currencies around the world float in value with demand, supply, and consumer confidence, their values change relative to each over time. Many factors can influence the exchange rates, including inflation, political stability, recession, speculation, terms of trade etc.

When selling products internationally, the exchange rate for the two trading countries' currencies is an important factor. Foreign exchange rates, in fact, are one of the most important determinants of a countries relative level of economic health, ranking just after interest rates and inflation. Exchange rates play a vital role in a country's level of trade, which is critical to most every free market economy in the world. Consequently, they areamong the most watched, analyzed, and manipulated economic measures.

A currency is freely floating if there does not exist a system of fixed exchange rates and if the Central Bank of the country in question does not attempt to influence the value of the currency. However, in reality this kind of situation does not exist.

In most of the countries Governments attempt to influence movements of exchange rate either through direct intervention in the exchange market or through a mix of fiscal and monetary policies. Under such circumstances, floating is called as 'managed' or 'dirtyfloat'. A number of countries use a pegged float as a system of exchange rates. The value of one currency is pegged to the value of another currency that itself floats. In a joint float,currencies in a particular group have a fixed exchange value in terms of each other, but the group of currencies floats in relation to other currencies outside the group.

A. Independent Variable – Current Account Deficit(in million USD) (X1)

The current account deficit is a measurement of a country's trade where the value of thegoods and services it imports exceeds the value of the products it exports. The current account represents a country's foreign transactions and, like the capital account, is a component of a country's balance of payments (BOP). A country can reduce its existing debt by increasing the value of its exports relative to the value of imports. It can place restrictions on imports, such as tariffs or quotas, or it can emphasize policies that promote export, such as import substitution, industrialization,or policies that improve domestic companies' global competitiveness. The country can also use monetary policy to improve the domestic currency's valuation relative to other currencies through devaluation, which reduces the country's export costs. While an existing deficit can imply that a country is spending beyond its means, having acurrent account deficit is not inherently disadvantageous. If a country uses external debt to finance investments that have higher returns than the interest rate on the debt, the country can remain solvent while running a current account deficit. If a country is unlikely to cover current debt levels with future revenue streams, however, it may become insolvent.

B. Independent Variable – National Debt (in million USD) (X2)

As the government's revenue from taxes and other sources fall short of its spending requirements, the government resorts to borrowings from markets and external sources. Public debt is the total liabilities of the central government contracted against the Consolidated Fund of India. Government debt can be categorized as internal debt (owedto lenders within the country) and external debt (owed to foreign lenders). Moderate increases in the debt will boost economic growth. However, an ever-increasing national debt slowly dampens growth over the long term. The only way to reduce the debtis to either raise taxes or cut spending. Either of those can slow economic growth. They are two of the tools of contractionary fiscal policy.

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Cutting spending has pitfalls. Government spending is a component of GDP. If the government cuts spending too much, economic growth will slow. That leads to lower revenues and a larger deficit. The best solution is to cut spending on areas that do not create many jobs. Tax increases beyond the 50% bracket can slow growth. The industriesor groups that pay higher taxes will get angry. Most governments can safely finance their debts instead of balancing the budget byissuing government bonds.

Based on the spending targets and likely resource mobilisation on tax and non-tax front,the government announces its borrowing programme for the fiscal in the Budget.

IV. EMPIRICAL ANALYSIS

A. *Objective*

To determine the impact of India's Current Account Deficit and NationalDebt on the country's Foreign Exchange Rate (vs. USD).

B. *Data Source*

Secondary data has been collected for all the variables from 1990-2018.Following are the sources of the data:

1) Current Account Balance by Organisation for Economic Cooperation andDevelopment (OECD) Data
2) Forex Rate Data from Handbook of Statistics by Reserve Bank of India
3) National Debt Data by www.countryeconomy.com

C. *Methodology and Results*

Simple Linear Regression and Multiple Linear Regression using Ordinary Least SquaresMethod under the assumptions of Classical Linear Regression Model.

V. REGRESSIONS

A. *One Dependent And One Explanatory VariableLinear Model-1*

Interpretation

Foreign Exchange Rate (INR vs. USD) and India's Current Account Deficit (in millionUSD)

Y: Foreign Exchange Rate

X: India's Current Account Deficit$Y_i = \beta_1 + \beta_2 X_i + u_i$

$\hat{Y_i}$ (Y hat) = $b_1 + b_2 X_i$, where b_1 and b_2 are estimators of β_1 and β_2 respectively.

1) Apriori Expectations of Partial Coefficients

Here, Apriori expectations of b_2 are negative because as India's current account deficit decreases **(or current account reaches balance)**, its Foreign Exchange Rate appreciates **(or the value of INR per US Dollar decreases)** in the short run. Observations may differin the long run.

$H_o : \beta_2 = 0 \quad H_a : \beta_2 < 0$

2) Running the Regression by OLS Method:

Model 1: OLS, using observations 1990 – 2018 (T = 29)Dependent Variable: Annual Average Forex Rate (Y)

	Coefficient	*Std. Error*	*t - ratio*	*p - value*	
Constant	39.4590	2.78220	14.18	4.96e-014	***
India's Current Account Deficit	−0.000227073	9.10415e-05	−2.494	0.0190	**

Mean dependent var	43.66923	*S.D. dependent var*	12.97279
Sum squared resid	3829.811	*S.E. of regression*	11.90986
R - squared	0.187259	*Adjusted R-squared*	0.157157
F(1, 27)	6.220902	*P-value (F)*	0.019045

According to the regression run by OLS method, it can be seen that the estimated coefficients are$b1 = 39.4590$
$b2 = -0.000227073$
$b1$ in the current model is insignificant as India's Current Account Deficits have not been zero inthe last 29 years. Theoretically if it is zero (meaning Current Account Deficits have no effect onthe Foreign Exchange Rate), then the estimated mean (Annual Avg.) Forex Rate vs. USD wouldbe 39.4590.
$b2$ is negative implying that as Current Account Deficit decreases **(or as Current Account reaches balance)**, its Foreign Exchange Rate appreciates **(or the value of INR per US Dollardecreases)** or vice versa. In other words, a decrease in the Current Account Deficit by 1 unit (1million USD) leads to estimated mean (Annual Avg.) Exchange Rate appreciation of Rs. 0.000227073 per US Dollar.
R^2 is 0.187259, which means that 18.7259% of total variation in (Annual Avg.) Forex Rate (INRvs. USD) is explained by Current Account Deficit.

$$\mathbf{Y_i\hat{}\ (Y\ hat) = 39.4590 - 0.000227073X}$$

3) t-Testing of b2

Assuming that $b1$, $b2$ follow approx. normal distribution with mean $\beta1$, $\beta2$ respectively:

- As the t ratio or t_{calc} (−2.494) of $b2$ is less than the $t_{critical,0.01,27}$ (2.473), we reject $H_o$at 1% LOS. Hence data is significant at 1% LOS.
- As the t ratio or t_{calc} (−2.494) of $b2$ is less than the $t_{critical,0.05,27}$ (1.703), we reject $H_o$at 5% LOS. Hence data is significant at 5% LOS.

4) Comparing p-value and α

When α is 1%

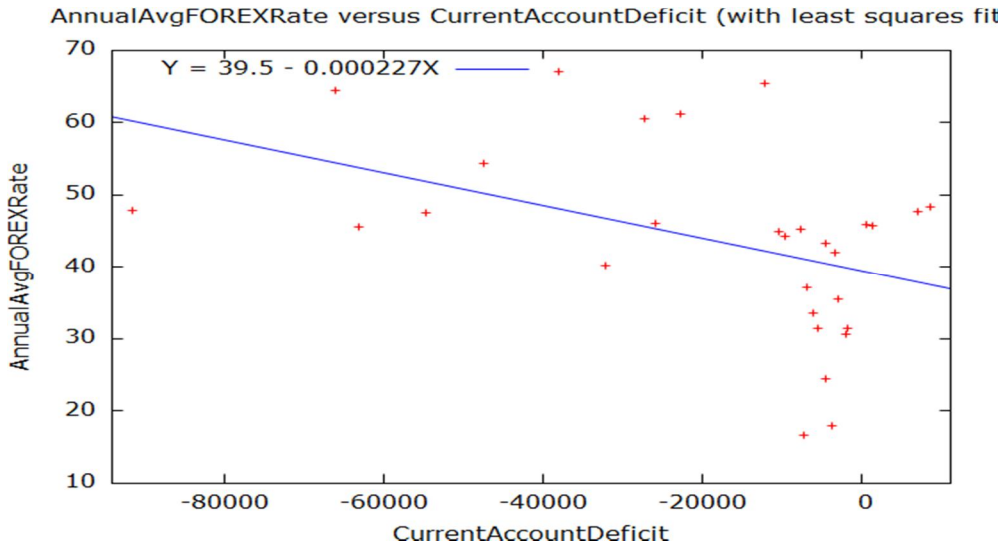
- $b1$ is statistically significant as its p-value (4.96e-014) is less than 1% α or$(4.12\times10^{-6}) \leq 0.01$.
- $b2$ is statistically insignificant as its p-value is less than 1% α or $0.0190 \geq 0.01$.

When α is 5%

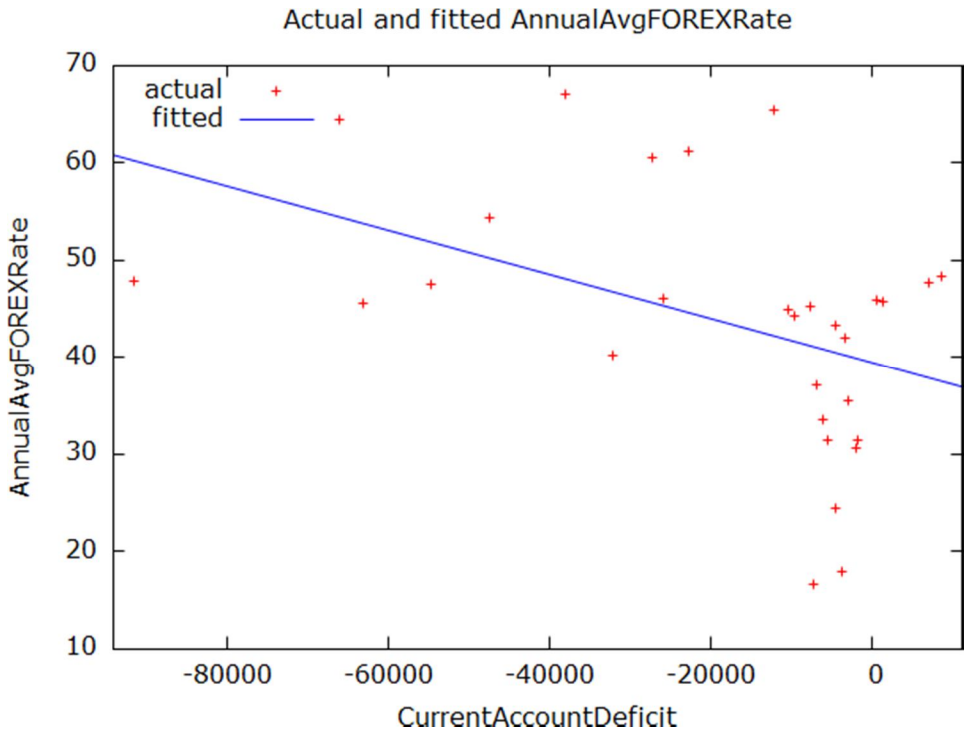
- $b1$ is statistically significant as its p-value (4.96e-014) is less than 5% α or$(4.12\times10^{-6}) \leq 0.05$.
- $b2$ is statistically significant as its p-value is less than 1% α or $0.0190 \leq 0.05$.

(Hypotheses testing values may differ because some CLRM assumptions may notbe satisfied.)

5) Scatter Plot between Y and X



6) Actual vs. Fitted Graph



7) ANOVA Table

Analysis of Variance:

	Sum of squares	*dof*	*Mean square*
Regression	882.403	1	882.403
Residual	3829.81	27	141.845
Total	4712.21	28	168.293

R^2 = 882.403 / 4712.21 = 0.187259

F(1, 27) = 882.403 / 141.845 = 6.2209 [p-value 0.0190]

To check if this model is significant or not:

H_0: $R^2 = 0$ H_0: $R^2 > 0$

Test Statistic = 6.220902

- Critical Value, $F_{0.01,1,27} = 7.68$

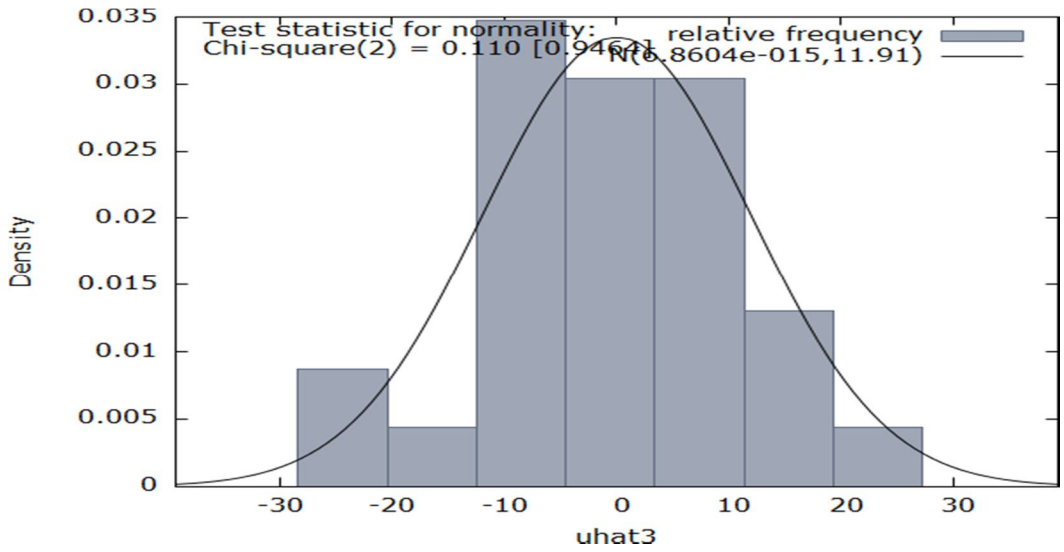
  As Test Statistic value is less than the Critical Value, it does not lie in the rejectionregion. Hence we fail to reject H_0 at 1% LOS.

- Critical Value, $F_{0.05,1,27} = 4.215$

  As Test Statistic value is greater than the Critical Value, it lies in the rejection region.Hence we reject H_0 at 5% LOS.

Model is significant at 5% LOS

8) Normality of Residual



Test for Normality of Residual:

H_o : : u_i is normally distributed

H_a : : u_i is not normally distributed

Chi-square (2) = 0.110 with p-value 0.94637

Keeping the Level of Significance at 1%, since p-value (.94637) is greater than α (0.01), we failto reject H_o at 1% LOS. This means that error terms are normally distributed.

B. Linear Model-2

Interpretation

- Foreign Exchange Rate (INR vs. USD) and India's National Debt (in million USD)

Y = Foreign Exchange RateX = India's National Debt

$Y_i = \beta_1 + \beta_2 X_i + u_i$

$\hat{Y_i}$ (Y hat) = $b_1 + b_2 X_i$, where b_1 and b_2 are estimators of β_1 and β_2 respectively.

1) Apriori Expectations of Partial Coefficients

Here, apriori expectations of b_2 are positive because, as National Debt of a country increases, its Foreign Exchange Rate will depreciate (or the value of INR per US Dollarincreases) in the short run. Observations may differ in the long run.

$H_o : \beta_2 = 0 H_a : \beta_2 > 0$

2) Running the Regression by OLS Method:

Model 2: OLS, using observations 1990 – 2018 (T = 29)Dependent Variable: Annual Average Forex Rate (Y)

	Coefficient	*Std. Error*	*t - ratio*	*p - value*	
Constant	**27.6337**	**2.19903**	**12.57**	**$8.58e^{-013}$**	***
India's NationalDebt	**$2.12825e^{-05}$**	**$2.40748e^{-06}$**	**8.840**	**$1.87e^{-09}$**	***

Mean dependent var	43.66923	*S.D. dependent var*	12.97279
Sum squared resid	1210.002	*S.E. of regression*	6.694393
R - squared	0.743220	*Adjusted R-squared*	0.733710
F(1, 27)	78.14838	*P-value (F)*	$1.87e^{-09}$

According to the regression run by OLS method, it can be seen that the estimatedcoefficients are:

$b_1 = 27.6337$

$b_2 = 2.12825e^{-05}$

b_1 in the current model is insignificant as India's National Debt has not been zero in the last 29 years. Theoretically, if it is zero (meaning National Debt has no effect on the FOREX Rate), then the estimated mean (Annual Avg.) FOREX Rate would be Rs. 27.6337 per USD.

b_2 is positive in the current model implying that an increase in the National Debt will increase the price of Indian Rupee per US Dollar (or Exchange Rate depreciation). In other words, an increase in India's National Debt by one unit (1 million USD) leads to an estimated mean (Annual Avg.) Exchange Rate depreciation of Rs. $2.12825e^{-05}$ (0.0143) per US Dollar.

R^2 value of 0.743220 means that 74.3220% of total variation in (Annual Avg.) FOREXRate is explained by National Debt.

$$\mathbf{Y_i\hat{}\ (Y\ hat) = 27.6337 + 2.12825e^{-05}X}$$

3) t-Testing of b2

Assuming that b_1, b_2 follow approx. normal distribution with mean β_1, β_2 respectively:

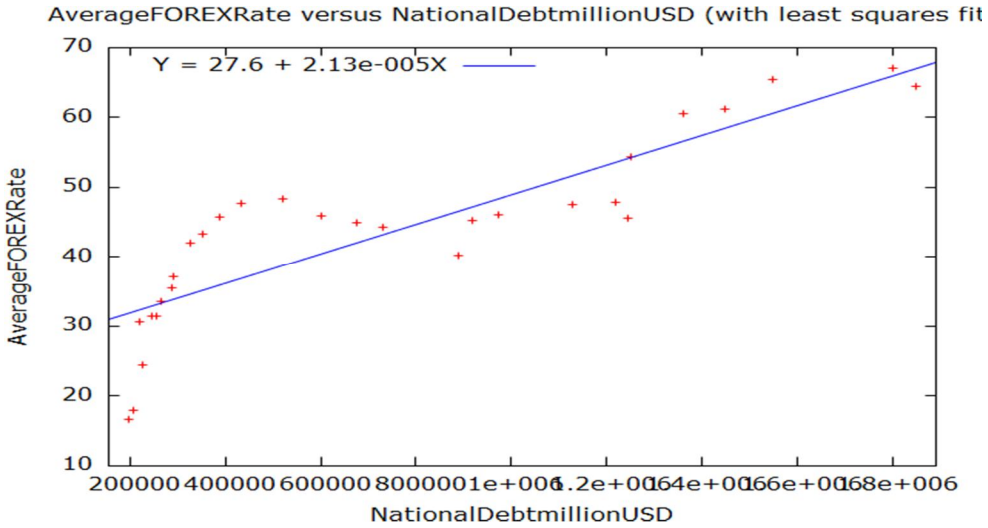
As the t ratio or t_{calc} (8.840) of b_2 is greater than the $t_{critical,0.01,27}$ (2.473), we rejectH_0 at 1% LOS. Hence data is significant at 1% LOS.

4) Comparing p-value and α

When α is 1%

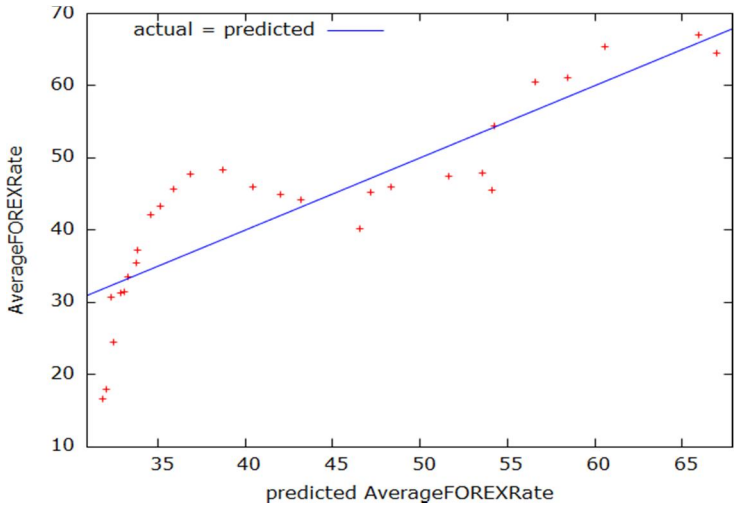
- b_1 is statistically significant as its p-value ($8.58e^{-013}$) is less than 1% α or$(1.93\times10^{-5}) \leq 0.01$.
- b_2 is statistically significant as its p-value ($1.87e^{-09}$) is less than 1% α or $2.307\times10^{-4} \leq 0.01$.

5) Scatter Plot Between Y and X



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6) Actual vs. Fitted Graph



7) ANOVA Table

Analysis of Variance:

	Sum of squares	*dof*	*Mean square*
Regression	3502.21	1	3502.21
Residual	1210	27	44.8149
Total	4712.21	28	168.293

R^2 = 3502.21 / 4712.21 = 0.743220

F(1, 27) = 3502.21 / 44.8149 = 78.1484 [p-value 1.87e-009]

To check if this model is significant or not:

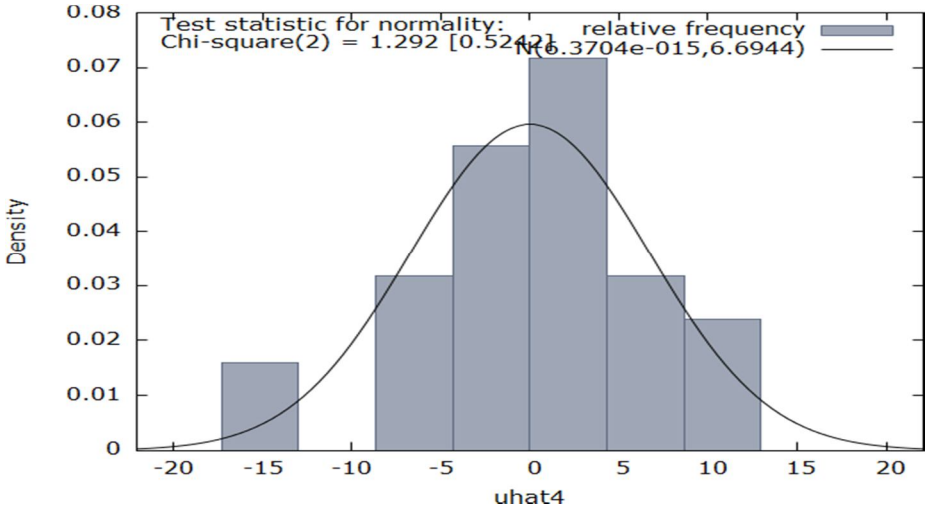
H_0: $R^2 = 0$ H_0: $R^2 > 0$

Test Statistic = 78.14838 Critical Value, $F_{0.01,1,27} = 7.68$

As Test Statistic value is greater than the Critical Value, it lies in the rejection region. Hence we reject H_0 at 1% LOS.

Model is significant at 1% LOS

8) Normality of Residual



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Test for Normality of Residual:

H_o : u_i is normally distributed

H_a : u_i is not normally distributed

Chi-square (2) = 1.292 with p-value 0.52418

Keeping the Level of Significance at 1%, since p-value (.52418) is greater than α (0.01), we failto reject H_o at 1% LOS. This means that error terms are normally distributed.

C. Linear Model-3

One Dependent And Two Explanatory VariableMultiple Linear Regression Model

Interpretation

Effect of India's Current Account Deficit and National Debt (both in million USD) on itsForex Rate (INR vs. USD)

Y: Foreign Exchange Rate

X_{2i} : India's Current Account DeficitX_{3i} : India's National Debt

$Y = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + u_i$

$\hat{Y}$ (Y Hat) = $b_1 + b_2 X_{2i} + b_3 X_{3i}$, where b_1, b_2 and b_3 are estimators of β_1, β_2 and $\beta_3$respectively.

1) Apriori Expectations of Partial Coefficients

Here, apriori expectations of b_2 are negative because as India's Current Account Deficit (X_2) decreases (or as current account reaches balance), its Foreign Exchange Rate (Y)appreciates (or the value of INR per US Dollar decreases).

And the apriori expectations of b_3 are positive because, as National Debt (X_3) of a country increases, its Foreign Exchange Rate (Y) will depreciate (or the value of INR perUS Dollar increases).

H_o: $\beta_2 = 0$; $\beta_3 = 0$ H_a: $\beta_2 < 0$; $\beta_3 > 0$

2) Running the Regression by OLS Method

Model 3: OLS, using observations 1990 – 2018 (T = 29)

Dependent Variable: Annual Average Forex Rate (INR vs. USD) (Y)

	Coefficient	*Std. Error*	*t - ratio*	*p - value*	
Constant	26.1513	1.93319	13.53	$2.82e^{-013}$	***
India's Current Account Deficit	0.000209308	$6.33290e^{-05}$	3.305	0.0028	***
India's National Debt	$2.84007e^{-05}$	$2.97936e^{-06}$	9.532	$5.69e^{-010}$	***

Mean dependent var	43.66923	*S.D. dependent var*	12.97279
Sum squared resid	852.0301	*S.E. of regression*	5.724543
R - squared	0.819187	*Adjusted R-squared*	0.805278
F(2, 26)	58.89744	*P-value (F)*	$2.21e^{-10}$

According to the regression run by OLS method, it can be seen that the estimated coefficientsare:

b_1 = 26.1513

b_2 = 0.000209308b_3 = $2.84007e^{-05}$

b_1 in the current model is insignificant as India's Current Account Deficit and National Debt have not been zero in the last 29 years. Theoretically, if it is zero (meaning Current Account Deficit and National Debt have no effect on the Forex Rate), then the estimated mean value of(Annual Avg.) Forex Rate would be Rs. 26.1513 per USD.

b_2 is positive implying that a decrease in the Current Account Deficit **(or as current account reaches balance)** will lead to Exchange Rate Depreciation **(or the value of INR per US Dollar increases)**. **)**. In other words, a decrease in India's Current Account Deficit by one unit (1 million USD) leads to an estimated mean Exchange Rate depreciation of Rs. 0.000209308 per US Dollar, holding India's National Debt constant.
This does not conform to our apriori expectations of b_2 being negative, possibly because of someCLRM assumptions being violated.

b_3 is positive in the current model implying that an increase in the National Debt will increase theprice of Indian Rupee per US Dollar **(or Exchange Rate depreciation)**. In other words, an increase in India's National Debt by one unit (1 million USD) leads to an estimated mean Exchange Rate depreciation of Rs. $2.84007e^{-05}$ (0.0191) per US Dollar, holding India's Current Account Deficit constant.
R^2 value (overall goodness of fit measure) of 0.819187 means that 81.9187% of total variation inthe (Annual Avg.) Forex Rate (of INR vs. USD) around its mean value is explained by India's Current Account Deficit and National Debt.

$$\mathbf{Y^{\wedge}\ (Y\ Hat) = 26.1513 + 0.000209308X_{2i} + 2.84007e^{-05}X_{3i,}}$$

3) t-Testing of b2 and b3
Assuming that b_1, b_2 and b_3 follow approx. normal distribution with mean β_1, β_2 and $\beta_3$respectively:

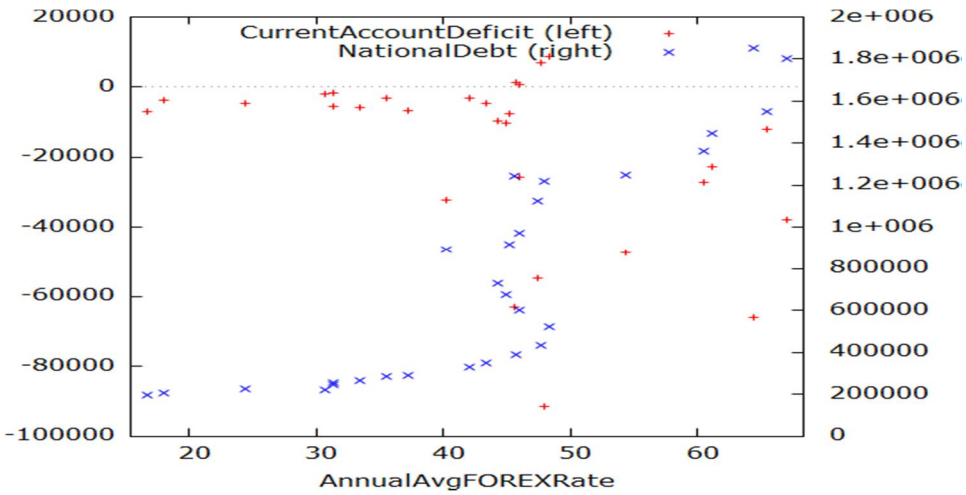
- **For b2:** As the t ratio or t_{calc} (3.305) of b_2 is greater than the $t_{critical,0.01,26}$ (2.479),we fail to reject H_o at 1% Level Of Significance. As the t ratio or t_{calc} (3.305) is less than the $t_{critical,0.001,26}$ (3.435), we reject H_o at0.1% Level Of Significance (or data is statistically significant at 0.1% LOS).
- **For b3:** As the t ratio or t_{calc} (9.532) of b_3 is greater than the $t_{critical,0.01,26}$ (2.479), wereject H_o at 1% Level Of Significance (or data is statistically significant at 0.1% LOS).

4) Comparing p-value and α
When α is 1%

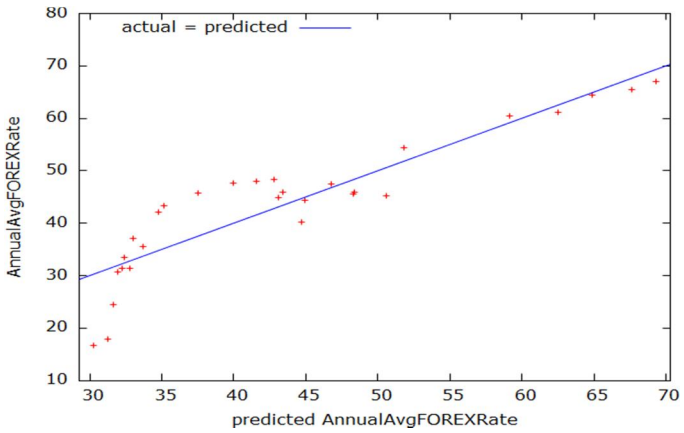
- b_1 is statistically significant as its p-value $2.82e^{-013}$ (6.37×10^{-6}) is less than 1% α or(6.37×10^{-6}) ≤ 0.01.
- b_2 is statistically significant as its p-value is less than 1% α or 0.0028 ≤ 0.01.
- b_3 is statistically significant as its p-value is less than 1% α or $5.69e^{-010}$ (2.58×10^{-4}) ≤ 0.01

The value of R^2 and Adjusted R^2 increases for Multiple Variable Regression ascompared to regressing Y only on X_2 or X_3. Thus it is better to use the MultipleLinear Regression Model.

5) Scatter Plot of X2, X3 and Y



6) Actual vs. Fitted Graph



7) ANOVA Table

Analysis of Variance:

	Sum of squares	*dof*	*Mean square*
Regression	3860.18	2	1930.09
Residual	852.03	26	32.7704
Total	4712.21	28	168.293

R^2 = 3860.18 / 4712.21 = 0.819187

F(2, 26) = 1930.09 / 32.7704 = 58.8974 [p-value 2.21e-010]

To check if this model is significant or not:

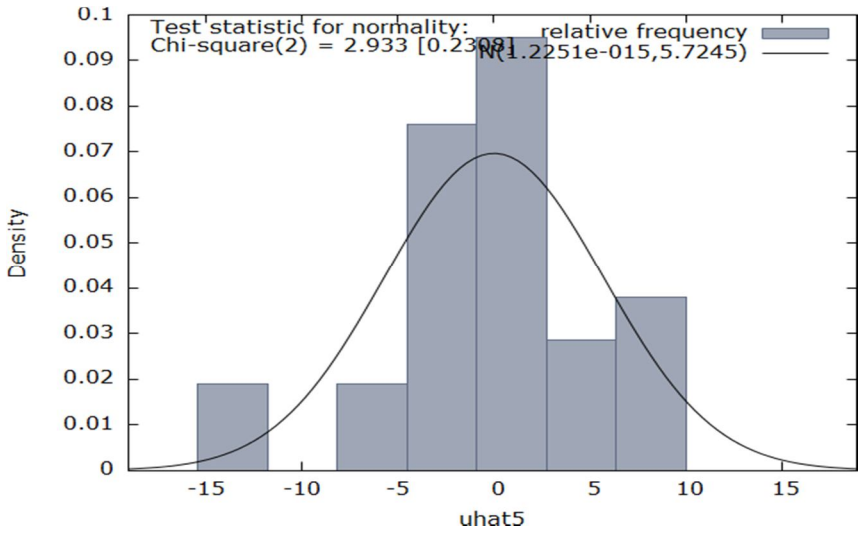
H_o: $R^2 = 0$ H_a: $R^2 > 0$

Test Statistic = 58.89744 Critical Values: $F_{0.01,2,26} = 5.53$

As Test Statistic value is greater than the Critical Value, it lies in the rejection region. Hence we reject H_o at 1% LOS.

Model is significant at 1% LOS.

8) Normality of Residual



Test for Normality of Residual:

H_O : u_i is normally distributed

H_a : u_i is not normally distributed

Chi-square (2) = 2.933 with p-value 0.23076

Keeping the Level of Significance at 1%, since p-value (.23076) is greater than α (0.01), we fail to reject H_O at 1% LOS. This means that error terms are normally distributed.

VI. CORRELATION MATRIC

Corr[India's Current Account Deficit (X_2), India's National Debt (X_3)] = -0.72286640

Under the null hypothesis of no correlation: t(27) = -5.43588, with two-tailed p-value 0.0000

The two X variables are not perfectly correlated since -0.72286640 < 1. Hence it follows the Classical Linear Regression Model (CLRM) assumption.

VII. DISCUSSION OF RESULTS AND POLICY RECOMMENDATIONS

Simple Linear Regression between Forex rate and current Account Deficit indicates a negative relationship between the two variables implying that with an increase in the deficit, Forex Rate would depreciate. A deficit in the current account shows that the value of the goods and services it imports exceeds the value of the products it exports. In other words, the country requires more foreign currency than it receives through sales of exports, and it supplies more of its own currency than foreigners demand for its products. The excess demand for foreign currency lowers the country's exchange rate (exchange rate depreciation).

Simple Linear Regression between Forex rate and National Debt indicates a positive relationship between the two variables implying that with an increase in the National Debt, value of INR per US Dollar would increase or India's Exchange Rate depreciation. A country with increasing government debt is less likely to acquire foreign capital, leading to inflation. Foreign investors will sell their bonds in the open market if the market predicts government debt within a certain country. As a result, a decrease in the value of its exchange rate will follow.

A country should aim to minimize their Current Account Deficit and Debt in the long run to ensure economic wellbeing.

VIII. LIMITATIONS AND DIRECTIONS FOR FUTURE WORK

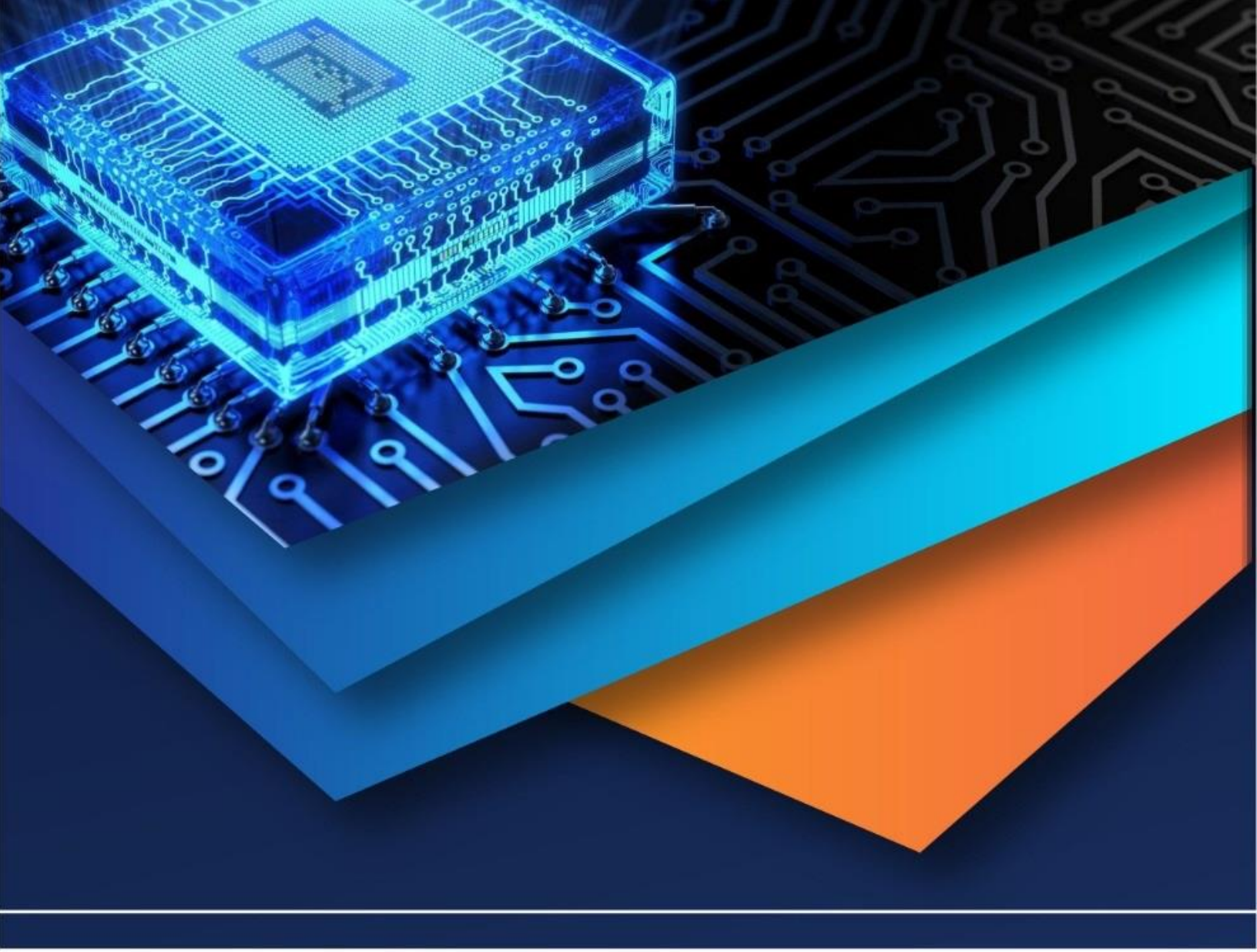
No work is free from limitations and this paper is no exception and thus the limitations need to be highlighted for better critical appreciation. It was hard finding accurate data for the National Debt of India. Few indicators had to be changed in order to fit the regression and obtain desired results. The apriori expectations of the impact of the Current Account Deficit on the Forex Rate were not matching with the regression results in the Multiple Linear Regression Model, possibly due to some CLRM assumptions not being satisfied, which could be rectified by using a larger database for more accurate result.

IX. CONCLUSION

This study analysed the impact of India's Current Account Deficit and National Debt on its Foreign Exchange Rate (INR vs. US Dollar). For 29 years from 1990-2018. The apriori expectations of the impact of the Current Account Deficit on the Forex Rate were not matching with the regression results in the Multiple Linear Regression Model, possibly due to some CLRM assumptions not being satisfied. Residuals were normally distributed.

BIBLIOGRAPHY

[1] https://countryeconomy.com/national-debt/india
[2] https://dbie.rbi.org.in/DBIE/dbie.rbi?site=statistics
[3] https://data.oecd.org/trade/current-account-balance.htm
[4] https://www.investopedia.com/trading/factors-influence-exchange-rates/
[5] https://www.thebalance.com/current-account-deficit-definition-components- and-causes-3305831
[6] https://www.thebalance.com/what-is-the-public-debt-3306294
[7] file:///C:/Users/MC%20DAS/Downloads/15716-17470-1-PB.pdf
[8] http://ijbssnet.com/journals/Vol_5_No_9_1_August_2014/9.pdf
[9] https://www.economicshelp.org/blog/2089/economics/exchange-rate-and- current-account/
[10] https://econclassroom.com/the-relationship-between-the-current-account- balance-and-exchange-rates/
[11] https://www.purefx.co.uk/foreign-currency-exchange-insight/view/how- does-national-debt-affect-the-foreign-exchange-rate



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