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Public Debt, Current Account Deficit and Economic Growth: A Study on Indian Context

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Abstract: ***External debt and internal debt form main components of the public debt structure in India. India's debt profile shows increasing external debt and simultaneously increasing the deficit in current account which have impact on economic growth of India. Our study assesses the impact of India's Gross External Debt (GED), Internal Debt (IND) and Current Account Deficit (CAD) on economic growth (GDP) by using time series data from 1998-99 to 2018-19. We intend to find long-run as well as short run relationship between the variables with the help of Eviews software. Stationarity of data is tested by considering Augmented Dickey-Fuller (ADF) test statistics and used Johansen Co-integration test and Vector Error Correction Model (VECM). The result shows co-integration among the variables with one equation. The result of VECM shows existence of long-run relationship among the variables. But the study fails to find the short-run causality among the variables. The results show external debt (GED), internal debt (IND), and Current Account Deficit (CAD) have negative and statistically insignificant relationship with GDP. It shows increase in public debt and deficit in current account results in decrease in GDP growth.***

Keywords: ***External Debt, Internal Debt, GDP, Current Account, CAD, VECM, India.***

I. INTRODUCTION

Public debt is the amount of money or the total outstanding debt that a country's central government owes to outside debtors. It is also called Government debt which can be raised both by externally and internally. It may be in the form of Treasury bill, Notes, and Bonds. The external debt is indebted to lenders of the other country and internal debt is the government's commitment to domestic lenders. A country can borrow from individuals, financial institutions like banks, international monetary institutions or from foreign governments. Public debt is one of the important sources of revenue for government. The government tries to get revenue in exchange of repayment of principal borrowed amount and interest on it at a specified rate on it at a fixed date in future.

In order to meet difficult financial situations such as budget deficit, government can borrow from external sources. Sometimes, to meet unplanned and unexpected emergency situations like major fires, floods and famine, it may not be possible to secure funds through taxation.

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Short term borrowing in anticipation of tax revenue in subsequent years is ordinarily used in the above circumstances. At the time of war, which need large amount of fund and the income generated through taxation falls short of the actual war expenditure, government will depend on external debt. To remedy situation like depression and unemployment which are generally due to deficiency of demand for goods and services, a country can raise public loans. Sometimes for the optimum utilization of their natural resources, public borrowings are very useful device. In order to finance a project, which promises a return sufficient enough for meeting debts generates payment of interest on the borrowed funds and the repayment of the capital in investment, public debt can be raised [2]. In most of the cases a country prefers public debt rather than depending on taxes. The reason behind this is, a country will be able to get extra fund to invest in developmental activities which helps to improve the living standard of people. As we know investment in government securities is risk free, it will attract risk-averse foreigners to buy government securities. The capability of a government to repay its debt can be expressed as a ratio of debt to GDP. Various studies show that when this ratio rises more and more, the growth of economy will slow down. Increasing public debt in modern times has created a problem of public debt management. Public debt has both positive as well as negative effect on economic growth of a country. If public debt gives a boost to the economy, we can say that there is a positive effect. However, a negative relationship arises because of the inefficient allocation of the resources [8]. A country's external borrowings are influenced by various factors, of which current account deficit (CAD) is one of them. Current account is an influential part of Balance of Payment which recordsimport and export of goods and services of a country. The current account balance (CAB) is an important macro-economic indicator, since they are closely related to other important components of national saving and investment, the budget balance, private saving haveimportant implication for overall economic growth [19]. A current account will show deficit balance when a country spends more than its production i.e. negative sales abroad that leads to debts and foreign liabilities of a country with rest of world. In this situation, a county will try to accumulate external liabilities to finance their deficit with foreign credit in the form of external debt, FDI and other form of capital. This further needs to payback these debts out of valuable foreign exchange reserves. Increase in external debt is a drawback as government has to make payment of these foreign debts that leads to rise in foreign currencies demand and decline in value of nation's domestic currency.

Here domestic currency will be devalued and the problem of foreign exchange crises may rise up [12].So CAB is an indicator of economy's performance and has a determining role on economic decision.

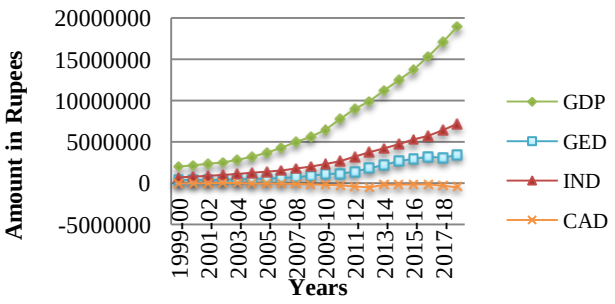
Table 1. CAD and Debt as a percentage of GDP

Years	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
CAD/GDP	-2.85	-2.87	-4.29	-4.82	-1.74	-1.32	-1.05	-0.63	-1.84	-2.11
Debt/GDP	18.6	18.6	21.1	22.4	23.9	23.8	23.4	19.9	20.1	19.7
GDPgrowth rate	7.8	8.5	5.0	5.46	6.39	7.41	8.0	8.17	7.17	6.81

Source: Handbook of Statistics on Indian Economy, RBI

Table 1 shows the position of India's debt stock to GDP ratio, current account deficit toGDPratio,andGDPgrowthrate forlast10yearsfrom2009-10to2018-19.India'sGDPgrowth rate stands at 6.81 which is less as compared to last 4 years. The growth rate is moderate. The position of debt stock is 19.7 percentage of GDP. It is less when compared to previous years. India's CAD stood at US$ 57256 million or -2.11 percent of GDP in 2018-19 which was US$ 38180 million or -2.85 percent of GDP 10 year earlier. The current account deficit to GDP was higher in 2018-19 as compared to last 5 years i.e. from 2013-14, which is not good for India.

Figure 1. Trend of GDP, GED, IND and CAD of India from 1999 to 2019



Source: RBI Handbook of Statistics

Figure 1 shows the graphical presentation of India's gross domestic product (GDP), gross external debt (GED), internal debt (IND) and current account deficit (CAD) for study period from 1999-00 to 2018-19. The data shows simultaneous increasing of GDP with public debt over the study period. But current account balance is widening towards deficit. India's CAD stands at Rs. -400227 million in 2018-19 which was Rs 16426 million 20 years before. The GDP stands at Rs 19010164 million at the end of 2018-19 with a growth rate of 6.81. The external debt is Rs 3441960 million in 2018-19 whereas internal debt is Rs 7201803 million. The data shows India's dependence on internal debt is more as compare to external debt over the period of study.

A. Statement of Problem

Though India is facing many economic problems, one of the formidable issue is public debt management. The inefficient allocation of resources has created negative impact on economy. If deficit will be financed from external debt,it may lead to the appreciation of the real exchange rate, results in the balance of payment crisis or an external debt crisis. So there is a need to analyze the position of a county's indebtedness, which has motivated to study on the effect of public debt on growth of economy in India.

B. *Objectives of Study*

The objectives of study are;

- To study the impact of public debt and current account deficit on economic growth
- To determine the degree of relationship among GDP, Public debt and Current account deficit.

II. LITERATURE REVIEW

Rathnayake (2020) analyzed the sustainability of public debt of Sri Lanka and investigated the fiscal imbalance for the period 1961-2018. To estimate governments inter temporal budget constraint, Auto regressive distribution lag (ARDL) technique is used. The result indicates that Sri Lanka's fiscal management is inconsistent with strong form sustainability. He concluded that Sri Lanka's fiscal policy stance is pro cyclical with strong stabilization tendencies in economic expansion that are not sustainable in contraction.

Gomez-Ganzalez (2019) reported a set of stylized facts about inflation linked (IL) public debt in emerging economies. The study found evidence of IL rates decreasing in about half of the most recent crises in emerging economic. The study compares inflation linked (IL) rates to Foreign Currencies (FC) and Local Currencies (LC) rates and concluded that for some countries, IL rates are below LC rates even after accounting for expected inflation. Yusuf (2018) examined the relationship between public debt and growth of economic in Tanzania. The study pointed out that large public debt can affect the growth of economy from the point of view of foreign investors, lenders become worry of investing. The study found that if a county's external debt amount is larger than economic size of country, it will lead to a possible capital flight which may discourage private investment. A negative impact which he found is, serving the external debt by export earnings may affect economic growth by depleting available income from social services.

Ibhagui (2018) explored the adjustment process of external debt in Sub Sahara African (SSA). This paper also examined the role of trade openness in the process of adjustment where terms of trade, government consumption, real effective exchange rate (REER), age dependency, and domestic incomes are considered for adjustment.

The analysis of result includes, during the study period 1985-2015, external debt set the tone to adjust current account deficit in SSA. He also concluded that increases in external debt can expand current account deficit of selected countries with high openness.

Dhir (2018) studied various factors that have impact on public debts in India. For this study, interest rate, strains and frictions imposed on the economy, ratio of total debt to total nation, unemployment, impact of work incentives, saving propensity have taken into consideration. The analysis has been done with the help of Random walk theory, Unit root test and trend analysis to find the result. This study restricted itself to the inter relationship between 3 variables. The result shows a positive significant impact of public debt on economic growth where raise in public debt results in increase in economic growth of country.

Qureshi et al. (2017) used data on 123 counties which are classified according to incomelevels for a period of 25 years from 1990-2015. To study the relationship between external debt and economic growth, VAR model had been used. The result shows external debt appears to have negative effect on growth rate, it is positively associated with income growth in lower and upper middle income countries. This paper concluded that savings and investments are the primary channels through which external debt impact economic growth.

Abubakar et al. (2016) examined the effect of increasing debt profile of India on growth of economy. This study testedthe short-run and long-run relationship among the variables, for which co-integration and VECM is employed. The study found that there is co-integration among the variables and there is existence of both short-run as well as long-run relationship among the variables.

Aloysius (2016) in his thesis investigated the effect of public debt on India's economic growth, for which GDP is taken as dependent variable and inflation, exchange rate and public debt are taken as independent variables. The study estimated the future relationship between economic growth and public debt. The study found the presence of 4 co-integrating vector. The granger causality result shows GDP does not granger cause Exchange rate, inflation and public debt in short-run.

Mehta et al. (2014) have studied the impact of India's current account deficit on foreign exchange and external debt. This study attempted to analyze the trend of India's external debt and current account balance over a period of two decades. The study covered the period ranging from 1990-91 to 2012-13. This study also found out the correlation between external debt and current account balance, its various components and some of the selected forex rates.

Kaur (2014) has assessed the impact of total external debt and total reserve on economic growth. The study period includes 1980 to 2012. The result of OLS says total external debt, short-run external debt, long-run external debt and total reserves have positive and significant impact on India's economic growth.

Couskun (2010) has studied the effect of economic growth on current account deficit. For this purpose some of the econometric models were followed. This study pointed out that current account deficit mainly depends on the savings from an income of a country. If spending is higher than saving, then the current account deficit will expand. The study tried to analyze some of the other factors having impact on economic growth like import and export of goods. The result of error correction model shows countries with quick economic growth expect to rise in current account deficit (CAD).

Murat et al. (2014) examined the current account deficit sustainability strategies in the economy of Turkish. This study collected data from central bank of Republic of Turkey from 2003 to 2013. This study considered an econometric model for finding the sustainability of current account in the economy of Turkey for which important sources of the current account deficit were taken into account. The model consists of Zivot Andrews Unit root test, Gregory Hansen cointegration test, dynamic OLS (DOLS) estimation, trend analysis. This study analyzed the trend line of current account deficit, and its financing, exchange rate mechanism, import coverage ratio. The study found the reasons for deficit in current account and concluded that Turkish economy found a weak form sustainability of current account.

From the review of related literature, it is found that public debt plays a significant rolefor promoting the growth of economyin the developing countries. Hence there is a need to study the different aspect of public debt. A number of studies have been undertaken in India and in other countries relating to impact of public debt on economic growth. Our study covers the relationship among current account deficit, public debt and its impact on economic growth. The present study tries to find the relation among the variables to fill the gap in Indian study in recent phenomenon with the following methodology for analysis and interpretation of result.

III. RESEARCH METHODOLOGY

A. *Data Source and Time Period*

This research is based on secondary source of data for a period of 20 years from 1999-20 to 2018-19. The data has been collected fromstatistical data published by RBI onIndian economy. We have collected yearly data for the study period.

B. *Brief Description of Variables*

For our study, GDP is considered as dependent variable which is a measure for economic growth of India. We have included public debt and current account deficit as independent variables in our model. For public debt we have considered gross external debt and internal debt as important indicator.

C. *Econometric Model Specification*

The model of this study is specified as:

$$GDP = f(GED, IND, CAD).....1$$

Where, GDP stands for Gross Domestic Product, GED stands for Gross External Debt, IND stands for Internal Debts, CAD stands for Current Account Deficit.

For our study we have calculated descriptive statistics, and then tested stationarity of data with the help of unit root test. We have considered (ADF) Augmented Dickey-Fuller statistics for checking stationary of data. First we have selected lag to be include in model through VAR Lag length section criteria. After that we have tested Co-integration among the variables.

The study has followed Johansen co-integration test for finding long-run association among the variables. After finding co-integration, we run Vector Error Correction Model (VECM) to check the long-run as well as short-run relationship among the variables [10].

The specified equation for VECM as:

$$\Delta GDP = \alpha + \sum_{i=1}^{k-1} \beta_i \Delta GDP_{t-1} + j=1k-1\beta j\Delta GEDt-j+m=1k-1\beta m\Delta INDt-m+ n=1k-1\beta n\Delta CADt-n+ \gamma ECTt-1+\mu t \ldots\ldots 2$$

The specified equation for Error Correction Term as:

$$ECT_{t-1} = GDP_{t-1} - \eta_1 GED_{(t-1)} - \delta_1 IND_{t-1} - \beta_1 CAD_{t-1} + \xi_1 R_{t-1} \ldots\ldots 3$$

Where, ΔGDP is the vector of Endogenous variable. α is the intercept, β_i, β_j,β_m, andβ_n are short-run dynamic coefficient of model's adjustmentlag variables, μ is the vector of error term, t is the time frame of study period. K-1is the maximum lag of variables;γ is the parameter of error correction term (ECT_{t-1}) in the model.$ECT_{t-1}$is the lagged value of the residuals obtained from co-integrating regression of the dependent variable on the regressors. It contains the long-run information derived from the long-run co-integrating relationship. Againfor ensuring goodness of fit of model this study also followed some of the diagnostic test like heteroscedastisity test and serial correlation test.

IV. RESULTS AND DISCUSSION

A. *Descriptive Statistics*

Table 2. Descriptive Statistics results

	GDP	GED	IND	CAD
Mean	7796912.	1441101.	2913818.	-138483.
Median	6053945.	1019708.	2174090.	-112258.
Maximum	1901016	3441960.	7201803	63983.0
Minimum	2023130.	411297.	714254.0	-479600.
Std. Dev.	5408418.	1087795.	2048616.	153716.5
Skewness	0.674062	0.69432	0.719152	-0.778317
Kurtosis	2.187218	1.89278	2.210317	2.620460
Jarque-Bera	2.065047	2.628585	2.243597	2.139301
Probability	0.356107	0.268664	0.32569	0.343128

Source: Authors' own calculation (Eviews)

Table 2 here shows the descriptive statistics which is computed to summarize large set of quantitative information. To describe central tendency, we used mean where value of mean of GDP is 7796912. Median is computed to find the exact middle of the set of value. Here median is 6053945 for GDP and in same way other variables' median and mean are being calculated. Standard deviation is being calculated to estimate the detail estimation of dispersion as it is the minimum root mean square deviation because it is calculated direct from arithmetic average. SD for trade balance is 5408418 showing a less deviation from origin. Maximum value is the largest value in the sequence and minimum is the lowest value in the sequence. Here maximum value of GDP is 19010164 and minimum value is 2023130. Skewness is the asymmetricity of the distribution of a statistical series. Our calculation shows that all the values are positive and positively skewed as mean is more than median except in case of CAD. Kurtosis is calculated to know the degree of peaknessof a distribution, which is about tails of the distribution. If its value is less than 3 then we can conclude that it is platikurtic, if value is more than 3 then it is called leptokurtic and if value is equal to 3 then it is called mesokurtic. From the above calculation it is clear that GDP, GED, IND and CAD are showing platikurtic distribution as their values are 2.18, 1.89, 2.21, and 2.62 respectively which are less than 3. The Jarue-Bera test statistics with p-value shows normal distribution of data because p-values are more than 0.05 level showing acceptance of null hypothesis that data are normally distributed.

B. *Unit Root Test*

As we are using time series data, we have tested stationary of datato avoid spurious regression. The stationary of data has been tested by calculating ADF unit root test. The following is the results of unit root test.

Table 3. ADF test statistics results

Variables	Level	1stdifference	2nddifference	Decision
GDP	12.66303(1.0000)	0.557654(0.9831)	-5.16417(0.0009)	I(2)
GED	1.834907(0.9994)	-2.628952(0.1057)	-5.825627(0.0002)	I(2)
IND	10.22546(1.0000)	-2.628952(0.1057)	-5.825627(0.0002)	I(2)
CAD	-1.04566 (0.7144)	-3.744663(0.0626)	-5.434574(0.0023)	I(2)

Source: Author's calculation (Eviews)

The above table 3 displays the result of stationary of data. First we have tested stationary of data at level, where we found GDP, GED, IND and CAD are not stationary. P values of GDP, GED, IND and CAD are 1.0, 0.99, 1.0, .714 respectively which are more than 0.05 level of significance. Then we tested stationary at first difference. Again we found p values of GDP, GED, IND and CAD are 0.98, 0.105, 0105 and 0.062 respectively which are more than 0.05 level. So data are not stationary at first difference. But when we tested at seconddifference, we found that p value of GDP, GED, IND and CAD are 0.0009, 0.0002, 0.0002, 0.0023 respectively which are less than 0.05 level. So we found that our series are integrated of order I (2).

C. Lag Selection Criteria

Table 4. VAR Lag length selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1005.328	NA	5.96e+43	112.1476	112.3454	112.1749
1	-897.9924	155.0406*	2.48e+39*	101.9992*	102.9885*	102.1356*
2	-882.2763	15.71613	3.57e+39	102.0307	103.8114	102.2762

Source: Author's calculation (Eviews)* denotes lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
HQ: Hannan-Quinn information criterion
SC: Schwarz information criterion

The result of VAR lag length selection criteria found 1 lag to include in model. We consider Akaike information criteria (AIC) to select lag. Here AIC value stands at 101.99 which is the lowest one. After selecting the lag to be included in our model, we have run Johansenco-integration test to find co-integration among the variables.

D. Johansen Cointegration Test

Table 5. Result of Johansen Cointegration Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Test		Max Eigen Value Test	
		Trace Statistic (0.05)	Critical Value	Max-Eigen Statistic (0.05)	Critical Value
None *	0.810566	54.30948	47.85613	29.94688	27.58434
At most 1	0.553725	24.36260	29.79707	14.52274	21.13162

At most 2	0.343922	9.839859	15.49471	7.586563	14.26460
At most 3	0.117665	2.253296	3.841466	2.253296	3.841466

Source: Author's own calculation (Eviews)* indicatesrejection of the hypothesis at the 0.05 level

We perform Johansen test to determine maximum possible cointegrating relationship. To find co-integration among variables, we consider Trace statistics and MaxEigen statistics. The result of trace statistics is 54.30948 which is more than critical value of 47.856431 at 0.05 level. The Max-Eigen Statistics is 29.9468 which is also more than critical value of 27.5843 at 0.05 level. The testof both Trace statistic and Max-Eigen statistic show rejection of null hypothesis at None that there is no co-integration among the variables. We found 1 co-integration equation at 5% level.

E. Vector Error Correction Model

After finding co-integration we have run Vector Error Correction Model (VECM) to study the long-run as well as short-run relationship among the variables. For this result following model is obtained:

$$D(GDP) = C(1) \times (\text{GDP}(-1) - 3.72027 \times \text{GED}(-1) - 1.5578 \times \text{IND}(-1) + 12.9334 \times \text{CAD}(-1) + 3712182.6569) + \text{C}(2) \times \text{D}\big(\text{GDP}(-1)\big) + \text{C}(3) \times \text{D}\big(\text{GED}(-1)\big) + \text{C}(4) \times \text{D}\big(\text{IND}(-1)\big) + \text{C}(5) \times \text{D}\big(\text{CAD}(-1)\big) + \text{C}(6) \ldots\ldots\ldots\ldots\ldots\ldots 4$$

The obtained lagged OLS residual from the long-run co-integrating equation is

$$ECT_{t-1} = [1.000\ GDP(-1) - 3.720267 \times \text{GED}(-1) - 1.5578 \times \text{IND}(-1) + 12.93347 \times \text{CAD}(-1) + 3712182.657] \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 5$$

Table 6. Result of Error Correction Model

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.133222	0.057552	-2.314812	0.0391
C(2)	0.954475	0.211326	4.516598	0.0007
C(3)	-0.134877	0.393469	-0.342789	0.7377
C(4)	-1.847586	0.980341	-1.884637	0.0839
C(5)	-0.253750	0.500337	-0.507157	0.6212
C(6)	737841.2	292825.6	2.519729	0.0269

R-squared	0.934862	Mean dependent var	935152.8
Adjusted R-squared	0.907722	S.D. dependent var	538045.1
S.E. of regression	163444.0	Akaike info criterion	27.10753
Sum squared resid	3.21E+11	Schwarz criterion	27.40432
Log likelihood	-237.9678	Hannan-Quinn criter.	27.14845
F-statistic	34.44500	Durbin-Watson stat	1.878274
Prob(F-statistic)	0.000001		

Source: Author's calculation (Eviews)

From the result in Table 6, the presence of a stable long run relationship is further confirmed by the significant Error Correction Term (ECT). C (1) represents the coefficient of the ECT. Our results shows coefficient of C (1) is -0.13322 which is negative and p value is 0.0391 which is statistically significant at 5% level, shows a long-run causality running from GED, IND and CAD to GDP. The result concluded the speed of adjustment of the economy towards long run equilibrium following a shock in the economy. The result shows that following a shock in the economy, about 13.32 percent convergence towards long run equilibrium is completed in one year.The first lag of GED, IND and CAD i.e. C (3), C (4), C (5) show coefficient -0.1349, -1.1875, -0.2537 respectively which are negative and show statistically insignificant impact on GDP. That means increase (decrease) in GED, IND, CAD by 1% will cause decrease (increase) in GDP by 0.134877, 1.847586, 0.253750 percent. R-squared indicate the explanatory power ofthe independent variables on the dependent variable. HereC (6) is intercept. From the R-squared coefficient, it can beseenthatabout93.48percentvariationsinGDPareexplainedbyth eindependentvariables.TheAdjusted R-Square also shows the explanatory power of the independent variables on the dependent variables by imposing restrictions on the inclusion of additional variables. Its coefficient shows that about 90.77 percent variations in GDP is explained by the independent variables. F-statistics is 34.445 and its probability value is 0.000 which shows the overall significance of the model. The DW statistics is 1.878274 which is less than 2 shows positive autocorrelation. Hence we can conclude that the model is fit and significant.

F. Wald test

If the past value of variables is useful in forecasting the future value of other variable, then we can say that variable granger cause another variable. To examine the short run causality among the variables, we employed the Wald Coefficient Restriction test and the result is presented in the table below:

Table 7. Result of Short-run Causality Test

Null Hypothesis	F-statistic	P-value
C(3)=0	0.11750	0.737
C(4)=0	3.55185	0.083
C(5)=0	0.25720	0.621

Source: Author's calculation (Eviews)

The above table shows the result of wald test. From the result of Wald test, P-value in all case are more than 0.05 level for which null hypothesis is accepted that there is no short-run causality running from GED, IND, CAD to GDP. We conclude that there is no short-run relationship among the variables.

G. Heteroskedasticity Test

Heteroskedasticity is the estimation of variance of the term in a regression model in an independent variable. We run this diagnostic test to avoid unreliable estimation of OLS due to bias.

Table 8. Heteroskedasticity Test: White

F-statistic	3.576262	Prob. F(14,4)	0.1137
Obs*R-squared	17.59435	Prob. Chi-Square(14)	0.2259
Scaled explained	17.95660	Prob. Chi-Square(14)	0.2088

Source: Author's Calculation (Eviews)

To test whether there is any heteroskeadasticity in the residuals or not, we run White test of heteroscedastisity. The above table shows result of White Heteroskedasticity test where F- statistics value is 3.5762 with p-value of 0.1137 for which we accept null hypothesis that there is no Heteroskedasticity in our model.

H. Serial Correlation Test

As we are dealing with time series data where error for one period is correlated with error for a subsequent time period, to avoid inefficient estimation of OLS or exaggerated goodness of fit, serial correlation test is used.

Table 9. Result of Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.753565	Prob.F(2,10)	0.2224
Obs*R-squared	4.673705	Prob.Chi-Square(2)	0.0966

Source: Author's Calculation (Eviews)

The above table 9 displays the result of Serial correlation test. The study employed the Breusch-Godfrey LM test for testing serial correlation. The F-statistics is 1.753565 with a p-value 0.2224. This leads to accepting the null hypothesis at 0.05 level that there is no serial correlation in our model.

V. FINDINGS OF THE STUDY

The findings of our study include, the stationarity test result reveals that all the variables have unit root at level and first difference but when converted to second difference they appeared to be stationary. The lag length selection criteria show one lag in to the model. The Johnson test of co integration reveals the presence of one co-integrating vectors. The study found that there exists a long-run relationship among the selected variables from Vector error correction model. In the long-run, the external debt, internal debt and current account deficit have a negative impact on GDP. R-square value shows model is good fit. DW statistics shows positive autocorrelation in our model which is desirable. The waldtest shows there is no short-run relationship among the variables. The diagnostic test shows there is no serial correlation and no heteroscedasticity in our model, which are desirables.

VI. CONCLUSION

This study examined the impact of internal debt, external debt, and current account deficits on GDP of India. Annual data from RBI handbook of statistics on Indian economy for a period of the period 1999-00 to 2018-19 were used. The study required to identify the existence of a significant relationship among external debt, internal debt, current accountdeficit and economic growth in India. The study estimated Johansen co-integration test and vector error correction model (VECM) to find the existence of short-run and long-run relationship among the variables. Our result showed the existenceof a long-run relationship in India for which we rejected null hypothesis. The Wald test showed that there is no short run causality running from GED, IND, and CAD to GDP for which we accepted null hypothesis. Our model fit well as we got a high R-square value and significant p value of F-statistics. The result of diagnostic test shows there is no heteroscedasticity, our model is free from serial correlation and our data is normally distributed. As we see in our result that economic growth in India is negatively affected by public debt, so in order to avoid debt overhang, the debt to GDP ratio should not be allowed to go beyond maximum limit. We suggest here to use public debt for long-term prospect like developmental activities, productive investment which would be helpful in growth of economy. If there will be any mismanagement in debt, it won't help in economic growth of country. As the current account balance has a relationship with public debt as well as growth of economy, increase in current account deficit may result in additional borrowing for India. It will also affect GDP growth. Another important suggestion resulting from the findings of this paper is that India should adopt more export promotional measures to reduce CAD and over dependence on external debt.

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