

Fiscal Deficit and Economic Growth Nexus in India: Evidence from an ARDL Bounds Testing Approach

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Abstract

Fiscal deficit plays a crucial role in influencing macroeconomic stability and economic growth in developing economies. This study examines the relationship between fiscal deficit and economic growth in India using the Auto Regressive Distributed Lag (ARDL) model. Annual time-series data were analyzed to explore both the short-run and long-run dynamics between the variables. The results of the unit root test indicate that the variables are integrated of order one, $I(1)$, and become stationary at the 1%, 5%, and 10% significance levels with trend and intercept. The ARDL bounds testing results confirm the existence of a long-run relationship between fiscal deficit and economic growth. The long-run estimation reveals a negative association, with a coefficient of -2.530 , indicating that a 1% increase in the fiscal deficit leads to a 2.53% decline in economic growth during the study period. The Error Correction Model (ECM) results show that the error correction term is statistically significant at the 1% level, with an estimated coefficient of 0.073, implying that approximately 7.3% of the disequilibrium from the previous period is corrected in the current period. Diagnostic tests confirm the absence of serial correlation, although heteroskedasticity is present. The stability of the model is verified through CUSUM and CUSUMSQ tests, indicating stable parameters. The study concludes that effective coordination between fiscal and monetary policies is essential, and maintaining fiscal discipline can help create a conducive environment for private investment and sustainable economic growth in India.

JEL Classification: E62, H62, O40, C22.

Keywords: Fiscal Deficit, Economic Growth, ARDL Model, Fiscal Policy, India, Macroeconomic Stability.

Introduction

Fiscal performance is one of the important aspects of economic development of a country, which is affected and set by public finance instruments such like tax policy, expenditure policy and overall budget policy. For emerging economies such as India, fiscal policy acts as a signal and instrument of economic growth, and tax and expenditure policies are frequently oriented toward development and macroeconomic stability with the

downside, however, of higher public debt. That higher public debt does represent a shift from neoclassical to Keynesian theories which suggest a larger role of the government and as an emerging economy, the larger role is perhaps required. Yet, large government deficits may also result in pressure on saving and investment, either directly or via inflation, or through changes in interest rates that blunt the economy's potential for macroeconomic stability. With a rising vogue of fiscal deficit and reliance on it, India had compelled the country to adopt rule-based countervailing measures to contain fiscal deficit in line with global standards, even state governments were eventually forced to follow suit. To analyze the consequences of these fiscal deficits we need to consider the different points of view of the Neoclassical Keynesian and Ricardian approach. Neoclassical The Neoclassical perspective emphasized in, views people as forward looking and make long-term consumption plans in their lifetime. This perspective reflects long run effects of permanent deficits and implies that economic growth will be lower if a decrease in government saving is not completely offset by an increase in private saving. This is particularly true under a closed economy, there higher consumer spending could result in lower aggregate savings. While, in Keynesian theory, deficit-financed government spending can actually increase economic output, particularly when there is an underemployment of resources. This view highlights the idea that government deficits can work in a multiplier way to actually increase instead of decrease private investment and, thus, stimulate economic growth, by a crowding-in rather than crowding out effect on private investment. Second, the Ricardian Equivalence Theorem (RET) holds that the time path of taxes has negligible effects on aggregate savings and investment.

The Ricardian Equivalence Theorem suggests that reductions in government savings caused by fiscal deficits are offset by increased private savings, as individuals anticipate future tax burdens to cover present government spending. In India, persistent fiscal deficits have largely been financed through borrowing from the Reserve Bank of India and public debt, leading to a mounting national debt burden. However, the composition of government expenditures often plays a crucial role in shaping such economic outcomes. Numerous studies have attempted to analyze the relationship between fiscal deficits and economic growth using diverse methodologies and within varying contexts. Yet, these analyses frequently struggle to account for the economic heterogeneity and divergent development strategies across regions. Rule-based frameworks, such as the Fiscal Responsibility and Budget Management (FRBM) Act of 2003, were introduced to address revenue deficits, promote fiscal discipline, and ensure sustainable governance primarily at the central level. Subsequently, these measures were adopted by state governments as well, aiming to curb fiscal indiscipline, alleviate high debt levels, mitigate monetary policy spillovers, and control inflationary pressures. While the FRBM Act proposes a broad framework for fiscal intervention, its practical implementation needs closer examination, particularly considering India's federal structure and the varying economic capacities of its states. Adaptation of these fiscal policies to such diversity is vital for ensuring long-term economic stability and equitable development across the nation.

Review of Literature

Ramu M R, Anantha and Gayithri, K (2016). This paper tries to answer the puzzle by taking up a longtermtime series analysis starting from 1980-81 to 2012-13. It also carries a detailed analysisby including the composition of fiscal deficit and its impact on GDP. By adopting a VectorError Correction method, this paper proves that fiscal deficit is adversely affecting growth and also argues that if fiscal deficit money is spent on capital formation, it promotes growth, supporting the 'Golden Rule' of public finance.

Amrutha. T, H.R. Chikkathimme Gowda, Afrin Zainab BI and K.S. Rashmi (2017). The Johansen methodology concludes an existence of a one cointegrating relationship among gross domestic product, fiscal deficit, gross domestic capital formation and employment. The finding of the study indicates that one per cent increase in fiscal deficit is likely to decrease Gross domestic product by 0.618609 thus, it shows there is a negative relationship between Gross domestic product and fiscal deficit in the long run. But the Vector Error Correction model discards the short run relationship between fiscal deficit and economic growth. Fiscal deficit hampered the economic growth in the long run hence gap between the government revenue and government expenditure should be minimized.

Vijay Singh Negi (2018). The results suggest that there is a negative relationship between GDP growth and fiscal deficit in the short run, indicating that an increase in fiscal deficit leads to a decrease in GDP growth in the same period. However, in the long run, the relationship is not significant, suggesting that fiscal deficit does not have a significant impact on the GDP growth of India. The findings suggest that policymakers should be cautious when managing fiscal deficit as it may have a negative impact on GDP growth in the short run. However, in the long run, the relationship between the two variables is not significant, indicating that other factors such as inflation, exchange rate, and foreign direct investment are more important in driving economic growth in India.

Sanjeev Kumar (2019) The regression result of the paper indicates that there is negative and significant impact of fiscal deficit on the economic growth of India. The research paper suggested that fiscal deficit within limit is good for economic growth and the government fund should be spent on beneficial projects. It is also suggested that sustainable economic growth and steady reduction in fiscal deficit can be achieved through fiscal policy reforms in Indi

Haseena Akbar, Neenu Rachal Philip, Santhosh Kumar P K, Ajay Rajeev (2024) The study explores the presence of cross-sectional heterogeneity and common factor dependence among the clubs of Indian states with similar growth paths. The CCE result reveals heterogeneity and common factor dependence among the groups, despite having similar growth paths. This underscores the need for tailored fiscal policies that consider the unique economic characteristics of the states to achieve a balanced economic growth. We explore the implications of the uniform fiscal rules and advocate for a paradigm shift towards a framework that supports state-specific fiscal autonomy and sustainable growth.

Methodology

The prime objective of this article is to study the impact of fiscal deficit on economic growth in India during the period from 1990-91 to 2024-25. For this purpose, the secondary data on India’s fiscal deficit and gross domestic product have been collected from Handbook of Statistics on Indian Economy. The collected data were analyzed with the help of econometrical tools such as unit root test, auto-regressive lag model (ARDL) to bounds test, error correction model, breusch-godfrey serial correlation LM test, Heteroskedasticity test and stability test. By using E-views 10 software, the study has been done.

Hypotheses

1. H_0 : There is no long run relationship between fiscal deficit (FD) and economic growth (EG) in India.
2. H_0 : There is no short run relationship between economic growth (EG) and fiscal deficit (FD) in India.
3. H_0 : There is no serial correlation between fiscal deficit (FD) and economic growth (EG) in India.
4. H_0 : There is no heteroskedasticity problem between fiscal deficit (FD) and economic growth (EG) in India.

Results and Discussions

Descriptive Statistics

The initial step involved visually and statistically analyzing the data. Descriptive statistics for the variables are presented in table 1.

Table 1 Descriptive Statistics

Variable	Fiscal Deficit	Economic Growth
Mean	443506.3	8273979.0
Median	145753.5	4267681.0
Maximum	1818291.0	29535668
Minimum	36325.0	531813.0
Standard Deviation	529742.5	8473213.0
Skewness	1.679620	1.032567
Kurtosis	4.687973	2.880615
Jarque-Bera	20.02281	6.061964
Probability	0.000045	0.048268

Source: Authors compilation.

Over the period from 1990-91 to 2024-25, the average economic growth in India was approximately 8273979.0, with a maximum economic growth of 29535668 and a minimum economic growth of 531813.0. Similarly, the average fiscal deficit in India was around 443506.3 with maximum fiscal deficit of 1818291.0 and a minimum of 36325.0. The standard deviation of both fiscal deficit and economic growth suggests that the data points are concentrated around the mean, and both variables exhibit positive skewness because skewness values greater than 1 are considered highly skewed. However, the kurtosis values for these variables are greater than 2, indicating that they do the distribution are too peaked. Furthermore, based on the Jarque-Bera test, both variables can be considered normally distributed.

Unit Root Test

To decide the request for incorporation, we start with the Augmented Dickey-Fuller (ADF) unit root tests. Table 2 shows the ADF trial of stationary for all variables specifically fiscal deficit and economic growth in India, in both levels and first differences.

Table 2 Augmented Dickey-Fuller Unit Root Test

Variable	Intercept							
	Level				1 st Difference			
	t-stat	1% CV	5% CV	10% CV	t-stat	1% CV	5% CV	10% CV
FD	0.804	-3.646	-2.954	-2.615	-5.866	-3.653	-2.957	-2.617
EG	7.320	-3.646	-2.954	-2.615	1.295	-3.689	-2.971	-2.625
Variable	Trend & Intercept							
	Level				1 st Difference			
	t-stat	1% CV	5% CV	10% CV	t-stat	1% CV	5% CV	10% CV
FD	-1.025	-4.262	-3.552	-3.209	-6.425	-4.273	-3.557	-3.212
EG	1.870	-4.262	-3.552	-3.209	-4.434	-4.394	-3.612	-3.243

Source: Authors own calculation.

The results indicate that fiscal deficit and economic growth in I(1) are stationary at 1% ,5% and 10% significant levels at trend and intercept. In view of these facts, the author applied ARDL approach to co-integration methods in this study which is the most suitable methods for this of dataset.

ARDL Bounds Test

First of all, the author checked the optimal lag length of the model before applying ARDL bounds test. The selection criteria for the optimal lags are mostly used to determine the order of the ARDL model. In order to

choose the lag length, the author chose Akaike Information Criteria (AIC) model and found that the optimal lag length was at (1,1).

Table 3 ARDL Bounds Test

Test Statistic	Value	Significance	I(0)	I(1)
F-statistic	172.249	10%	3.02	3.51
		5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

Source: Authors own calculation.

Table 3 shows the results of long run relationship among the both variables for India. Based on the results, the calculated F-statistics is 172.249 which is greater than 1%, 5% and 10% upper bound critical values provided by Narayan (2005) for India. For the reason, null hypothesis of no co-integration can be rejected, showing that there is a long run relationship between fiscal deficit and economic growth in India.

Long Run Test

After bounds test results confirmed that there is long run co-integration relationship between dependent variable of economic growth and independent variable of fiscal deficit in India with the optimal lag structure of the variable (1, 1). The following table showed the results for ARDL long run coefficients.

Table 4 Long Run Coefficient of ARDL Test

Variable	Coefficient	S.E	t	Probability
C	139281.1	78743.99	1.768	0.087
FD	-2.530	0.388	-6.520	0.000
R²	0.998	MDV	8508590.0	
Adjusted R²	0.998	S.D. PV	8491703.0	
Regression	315641.5	AIC	28.275	
SSR	2.893	SIC	28.457	

LL	-462.550	HIC	28.336
F	7710.560	Durbin-Watson statistic	1.730
Probability of F	0.000		

Source: Authors own calculation.

Table 4 explained that fiscal deficit has the negative relationship with economic growth in India. The value of the coefficient on fiscal deficit is -2.530 which means that a 1% increase in fiscal deficit is related to approximately 2.530% decrease in economic growth in India. This negative relationship arises because persistent fiscal deficits often lead to higher government borrowing, which can crowd out private investment by raising interest rates and absorbing domestic savings. Over time, the mounting public debt increases interest payment obligations, reducing the share of government expenditure available for productive sectors such as infrastructure, health, and education. In India, a significant portion of fiscal deficits during this period has been directed toward subsidies, consumption-oriented spending, and administrative costs rather than capital formation, leading to weaker growth multipliers. Additionally, sustained deficits can fuel inflationary pressures, depreciate the currency, and create external imbalances, all of which dampen investor confidence and reduce both domestic and foreign investment. These long-term structural effects cumulatively explain why a sustained rise in the fiscal deficit is linked to a disproportionately larger decline in India’s economic growth.

Short Run Test

The short run representation of the model shown in the estimating table below.

Table 5 Short Run Error Correction of ARDL Test

Variable	Coefficient	Std. Error	t-Statistic	Probability
CointEq(-1)*	0.073	0.003	23.502	0.000
R²	0.900	MDV		878904.7
Adjusted R²	0.897	S.D. DV		954166.6
Regression	305289.8	AIC		28.154
SSR	2.890	SIC		28.245
LL	-462.5	HIC		28.185
Durbin-Watson statistic	1.730			

Source: Authors own calculation.

The results demonstrate that the error correction term (ECT) represented by CointEq(-1) in the table 5 measures the speed at which prior derivations from the equilibrium are current period. The ECT is as expected, significantly positive at 1% level of significance with estimated coefficient of 0.073. This indicates that 7.3% of

the disequilibrium due to the previous year’s shocks is adjusted back to long run equilibrium in the current year. In the short run, this slow adjustment speed reflects India’s structural and policy-related constraints. Fiscal deficit changes often have delayed effects on growth due to project implementation lags, bureaucratic procedures, and the time needed for investments to translate into productive output. Additionally, short-run dynamics are influenced by the composition of fiscal spending capital expenditure can stimulate growth quickly, whereas revenue expenditure such as subsidies and administrative costs yields weaker or inflationary effects. Crowding-out effects from higher government borrowing, inflationary pressures, and external shocks such as global commodity price volatility also moderate the short-run response. These factors, combined with India’s long-standing fiscal rigidities, explain why the adjustment toward the long-run fiscal balance.

Breusch-Godfrey Serial Correlation LM Test

Table 6 shows that there is no serial correlation in the model confirmed by Breusch-Godfrey Serial Correlation LM Test.

Table 6 Breusch-Godfrey Serial Correlation LM Test

F-Statistic	0.034	Prob. F (2,27)	0.966
Obs*R²	0.083	Prob. Chi-Square (2)	0.958

Source: Authors own calculation.

The sensitively analysis is followed by the corresponding F-ststistics and probability value of table 6. LM test of H₀ shows that there is no serial correlation. The p-value for LM test is 0.966 which is greater than 5 %, So H₀ is failed to reject which means that there is no serial correlation.

Heteroskedasticity of BPG Test

Table 7 explains a Breusch-Pagan-Godfrey test indicates that there is no sign of autoregressive conditional hetroskedasticity.

Table 7 Heteroskedasticity of Breusch-Pagan-Godfrey Test

F-statistic	3.211	Prob. F (3,29)	0.037
Obs*R²	8.229	Prob. Chi-Square S (3)	0.041
Scaled explained SS	15.167	Prob. Chi-Square S (3)	0.001

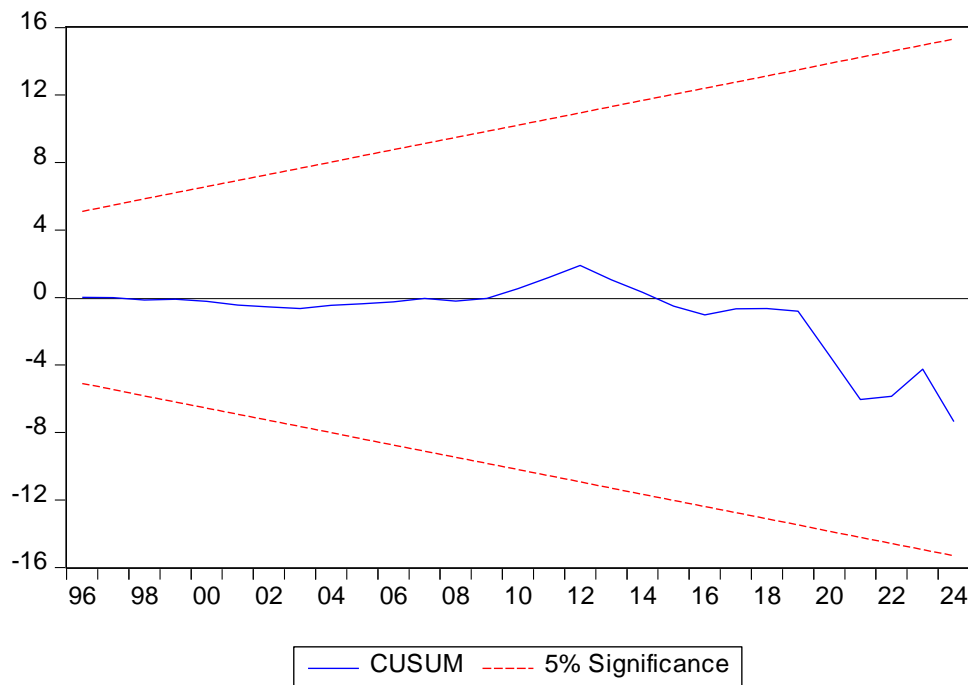
Source: Authors own calculation.

The sensitively analysis is followed by the corresponding F-statistics and probability value of table 7. H₀ for heteroskedasticity is that there is no heteroskedasticity problem. Here p-value for heteroskedasticity is 0.037 which is five percent . So H₀ is failed to not reject which means there are heteroskedasticity problems.

The Stability Test

For the stability test of model, we have used CUSUM test.

Figure 1: CUSUM



The study follows that the model is stable or not. The ARDL and ECM attest that our model is stable through CUSUM test in the figures 1. The plots of blue line not cross the red line mean critical value line, which directs the stability of the predictable techniques. This model is well specified to the goodness of fit.

Conclusion

This study explores the fiscal deficit and economic growth nexus in India: Evidence from an ARDL bounds testing approach. The results of unit-root test indicate that fiscal deficit and economic growth in I(1) are stationary at 1% ,5% and 10% significant levels at trend and intercept. Results explore that the long run, economic growth has a negative relationship with fiscal deficit at -2.530 which implies that a 1% increase in fiscal deficit to 253.0 % decrease in the economic growth in India during the study periods. As well as, in the short run ECM results the error correction term is as expected, significantly positive at 1% level of significance with estimated coefficient of 0.073. This indicates that 7.3% of the disequilibrium due to the previous year’s shocks is adjusted back to long run equilibrium in the current year. Moreover, there is no serial correlation, there are heteroskedasticity problems and the plots of blue line not cross the red line mean critical value line, which directs the stability of the predictable techniques.

Policy Recommendations

India should pursue a gradual fiscal consolidation path targeting a deficit of 4.5% of GDP by FY 2025-26, while maintaining strategic flexibility for counter-cyclical policies during economic downturns. The

government should prioritize quality of expenditure over absolute deficit reduction, focusing on productive capital investments that crowd-in private sector participation and enhance long-term growth potential. Optimal fiscal deficit levels for India appear to be around 3-3.5% of GDP for sustainable growth, as empirical evidence suggests that deficits beyond this threshold adversely impact economic expansion through crowding-out effects and increased borrowing costs. The fiscal framework should emphasize debt-to-GDP ratio management as the primary anchor from FY 2026-27, targeting a reduction to around 50% by 2031, which provides more flexibility than rigid annual deficit targets while ensuring fiscal sustainability. Revenue enhancement through improved tax compliance and broadening the tax base should complement expenditure rationalization, with particular focus on reducing revenue deficits that constitute unproductive spending. The government should maintain capital expenditure at 3-3.5% of GDP to support infrastructure development and productivity growth, while ensuring that fiscal consolidation does not compromise essential growth-supporting investments. Counter-cyclical fiscal policy space should be preserved through the fiscal responsibility and budget management (FRBM) Act's escape clauses, allowing temporary deviations during extraordinary circumstances while maintaining medium-term consolidation commitments. Finally, coordination between fiscal and monetary policies is crucial, with fiscal discipline enabling the RBI to maintain accommodative monetary conditions that support private investment and overall economic growth.

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