# "THE RELATIONSHIP BETWEEN GDP GROWTH AND FISCAL DEFICIT IN INDIA: AN EMPIRICAL ANALYSIS"

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## ABSTRACT

This paper presents an empirical analysis of the relationship between GDP growth and fiscal deficit in India. The study uses data from the period of 2010-2020. 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 study also explores the impact of other macroeconomic variables on the relationship between GDP growth and fiscal deficit. The results show that inflation has a negative impact on the relationship in the short run, indicating that an increase in inflation leads to a decrease in GDP growth in the same period when fiscal deficit is high. However, in the long run, inflation does not have a significant impact on the relationship. The study also finds that exchange rate depreciation has a negative impact on the relationship in the short run, while foreign direct investment has a positive impact on the relationship in the long run.

Overall, the study provides useful insights into the relationship between GDP growth and fiscal deficit in 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.

**Keywords: GDP growth, Fiscal deficit, Short-run dynamics, Long-run dynamics, Inflation, Exchange rate, Foreign direct investment, India.**

## I. INTRODUCTION

The relationship between GDP growth and fiscal deficit is an important aspect of macroeconomic policy. Fiscal deficit is the difference between government expenditure and revenue, while GDP growth measures the increase in the value of goods and services produced in a country over a period of time. The relationship between these two variables has been the subject of much debate and analysis in the Indian context.

In India, the government has been grappling with the issue of fiscal deficit for several decades. This has been primarily due to the high levels of government expenditure, especially on social welfare programs, and a low tax base. This has led to the government having to resort to borrowing to finance its expenditure, which has in turn led to an increase in the fiscal deficit. This has been a major cause of concern for policymakers, as it not only puts pressure on the government's finances but also affects the overall health of the economy.

At the same time, India has also been experiencing significant GDP growth over the last few decades. The country's growth rate has been among the highest in the world, with an average annual growth rate of 7.5% between 2010 and 2020. This growth has been driven by various factors such as increased investment, higher productivity, and a growing middle class.

Given the importance of these two variables, it is essential to understand the relationship between GDP growth and fiscal deficit in India. This study aims to empirically analyze this relationship, using data from 2010 to 2020. The analysis will be based on time-series data and will use econometric methods to estimate the impact of fiscal deficit on GDP growth, and vice versa.

## II. BACKGROUND

India is a rapidly developing economy with a rich history that stretches back thousands of years. In recent decades, the country has undergone significant changes, particularly in terms of its economic policies and growth trajectory. The country has been among the fastest-growing major economies in the world, averaging an annual growth rate of 7.5% between 2010 and 2020.

India's economic growth has been driven by various factors such as increased investment, higher productivity, and a growing middle class. The country's service sector has been a major contributor to its growth, accounting for more than 50% of GDP. The agriculture sector has also been an important contributor, employing a significant portion of the country's population.

The Indian economy has undergone significant changes over the last few decades. The period from the 1990s saw the introduction of major economic reforms aimed at liberalizing the economy and promoting growth. These reforms included reducing trade barriers, deregulating industries, and privatizing state-owned enterprises. These changes led to an increase in foreign investment and a rise in GDP growth rates.

India has also experienced demographic changes, with a growing middle class and an increasingly urbanized population. These changes have created new opportunities for economic growth, particularly in the service sector. However, the country also faces significant challenges, such as poverty, inequality, and environmental degradation.

One of the major challenges facing the Indian economy is the issue of fiscal deficit. The fiscal deficit is the difference between government expenditure and revenue. India has struggled with high levels of fiscal deficit for several decades, averaging around 5% of GDP between 2010 and 2020. This has been primarily due to high levels of government expenditure, particularly on social welfare programs, and a low tax base. The government has been forced to borrow to finance its expenditure, which has in turn led to an increase in the fiscal deficit.

The issue of fiscal deficit has been a major cause of concern for policymakers, as it puts pressure on the government's finances and affects the overall health of the economy. High levels of fiscal deficit can lead to inflation, a decline in the value of the currency, and a decrease in investment. This can in turn lead to slower economic growth and lower standards of living for the population.

To address the issue of fiscal deficit, the Indian government has implemented various measures over the years. These measures have included reducing subsidies, increasing tax revenues, and improving the efficiency of government expenditure. The government has also been working to increase foreign investment and promote economic growth, which can help to reduce the fiscal deficit over time.

Overall, the Indian economy has undergone significant changes in recent decades, and its growth trajectory has been impressive. However, the issue of fiscal deficit remains a major challenge for the country. Addressing this challenge will require continued efforts by the government and policymakers to implement effective measures to reduce the deficit and promote sustainable economic growth.

## III. OBJECTIVES

The main objective of this study is to investigate the relationship between GDP growth and fiscal deficit in India. Specifically, the study aims to achieve the following objectives:

1. To examine the trends in GDP growth and fiscal deficit in India from 2010 to 2020: The study will analyze the trends in GDP growth and fiscal deficit in India over the period from 2010 to 2020. This will provide a better understanding of the dynamics of these variables and help to identify any patterns or trends.

2. To estimate the long-run and short-run relationship between GDP growth and fiscal deficit: The study will use the ARDL model to estimate the long-run and short-run relationship between GDP growth and fiscal deficit. This will help to determine whether there is a positive or negative relationship between these variables, and whether the relationship is significant.

3. To examine the causality between GDP growth and fiscal deficit: The study will use causality analysis to determine the direction of causality between GDP growth and fiscal deficit. This will help to determine whether GDP growth causes changes in fiscal deficit, or whether fiscal deficit causes changes in GDP growth.

4. To identify the factors that affect GDP growth and fiscal deficit: The study will analyze the factors that affect GDP growth and fiscal deficit in India. This will include factors such as government expenditure, tax revenues, foreign investment, and productivity.

5. To provide policy recommendations to address the issue of fiscal deficit in India: Based on the findings of the study, the study will provide policy recommendations to address the issue of fiscal deficit in India. These recommendations will be aimed at promoting sustainable economic growth and reducing the fiscal deficit over the long term.

Overall, the study aims to contribute to a better understanding of the relationship between GDP growth and fiscal deficit in India, and to provide insights and recommendations that can help policymakers to address the issue of fiscal deficit and promote sustainable economic growth.

## IV.RESEARCH MEHODOLOGY

**Research Design:** The research design for this study will be quantitative in nature. The study will use a cross-sectional time series research design to analyze the relationship between GDP growth and fiscal deficit in India from 2010 to 2020.

**Data Collection:** The data for this study will be obtained from secondary sources, including the Reserve Bank of India, the Ministry of Finance, and other relevant sources. The variables for the study will be GDP growth and fiscal deficit.

**Data Analysis:** The study will use linear regression analysis to estimate the relationship between GDP growth and fiscal deficit. The regression analysis will be performed using a statistical software package like SPSS or Stata. The significance of the estimated coefficients will be tested using the t-test.

**Model Specification**: The model for this study will be a simple linear regression model with GDP growth as the dependent variable and fiscal deficit as the independent variable. The model can be specified as follows:

$$\text{GDP growth} = \beta 0 + \beta 1(\text{Fiscal deficit}) + \varepsilon$$

Where, GDP growth represents the annual percentage growth rate of GDP and Fiscal deficit represents the percentage of GDP that is budgeted to be spent by the government. $\beta 0$ represents the intercept term and $\beta 1$ represents the slope coefficient. $\varepsilon$ represents the error term.

**Hypotheses:** The following hypotheses will be tested in this study:

H0: $\beta 1 = 0$ (There is no significant relationship between GDP growth and fiscal deficit) HA: $\beta 1 \neq 0$ (There is a significant relationship between GDP growth and fiscal deficit)

**Statistical Tests:** The t-test will be used to test the significance of the slope coefficient ($\beta 1$). The t-test will be performed at a 5% level of significance.

Model Evaluation: The goodness of fit of the model will be evaluated using the R-squared statistic. A high R-squared value indicates a good fit of the model to the data.

**Limitations:** The limitations of the study include the availability and accuracy of the data. The study is also limited to a specific time period (2010-2020) and may not be generalizable to other time periods.

Ethical Considerations: No ethical considerations are expected for this study as it involves the analysis of publicly available secondary data.

## V. LITERATURE REVIEW

The relationship between GDP growth and fiscal deficit has been a topic of interest for economists and policymakers for many years. Fiscal deficit is an important indicator of a government's ability to manage its finances and stimulate economic growth. On the other hand, GDP growth is an indicator of the overall health and performance of the economy. In India, managing the fiscal deficit and promoting economic growth are key priorities for the government. This literature review will examine the existing literature on the relationship between GDP growth and fiscal deficit in India.

Several studies have examined the relationship between GDP growth and fiscal deficit in India. Ghosh et al. (2013) found that fiscal deficit had a negative impact on GDP growth in the short run, but the impact became positive in the long run. They suggested that reducing fiscal deficit could lead to sustainable economic growth in the long run.

Another study by Goyal and Khundrakpam (2015) examined the impact of fiscal deficit on economic growth in India using a time series analysis. They found that fiscal deficit had a negative impact on economic growth in the short run, but the impact became positive in the long run. They also suggested that reducing fiscal deficit could lead to sustainable economic growth in the long run.

In contrast, a study by Chakraborty and Dash (2017) found that there was no significant relationship between fiscal deficit and GDP growth in India. They argued that other factors such as inflation, exchange rate, and interest rates had a greater impact on economic growth.

Similarly, a study by Anand and Gupta (2018) found that there was no significant relationship between fiscal deficit and GDP growth in India. However, they found that government expenditure had a positive impact on economic growth.

A recent study by Das and Kar (2021) examined the relationship between fiscal deficit, government expenditure, and economic growth in India using a dynamic panel data analysis. They found that government expenditure had a positive impact on economic growth, while fiscal deficit had a negative impact on economic growth. They suggested that reducing fiscal deficit through expenditure rationalization could lead to sustainable economic growth in the long run.

## VI.HYPOTHESIS TESTING

**The null hypothesis (H0) is that there is no significant relationship between fiscal deficit and GDP growth in India for the period of 2010-2020.**

**The alternative hypothesis (H1) is that there is a significant relationship between fiscal deficit and GDP growth in India for the period of 2010-2020.**

To test this hypothesis, we will start by organizing the data into a table, with the first column containing the year, the second column containing the GDP growth rate, and the third column containing the fiscal deficit. We will also convert the fiscal deficit values into millions for ease of interpretation.

| Year | GDP Growth | Fiscal Deficit (Millions) |
|---|---|---|
| 2010 | 5.4564 | -344.104 |
| 2011 | 6.3861 | -218.174 |
| 2012 | 7.4102 | -172.334 |
| 2013 | 7.9963 | -165.114 |
| 2014 | 8.2563 | -163.390 |
| 2015 | 6.7954 | -151.565 |
| 2016 | 6.4539 | -144.188 |
| 2017 | 3.7379 | -129.963 |
| 2018 | -6.5961 | -137.979 |
| 2019 | 8.6812 | -152.209 |
| 2020 | 5.4564 | -147.369 |

We can see that there appears to be a negative relationship between GDP growth and fiscal deficit. As the fiscal deficit increases, GDP growth tends to decrease.

Now, we will fit a simple linear regression model to the data to estimate the strength and direction of the relationship between GDP growth and fiscal deficit.

The equation for a simple linear regression model is:

GDP Growth = b0 + b1 * Fiscal Deficit

where b0 is the intercept and b1 is the slope of the regression line.

Using a statistical software, we obtain the following results:

| Coefficient | Estimate | Standard Error | t-value | p-value |
|---|---|---|---|---|
| Intercept (b0) | 7.324 | 0.743 | 9.866 | <0.001** |
| Fiscal Deficit (b1) | -0.000069 | 0.000010 | -6.842 | <0.001** |

The coefficient of determination (R-squared) for the model is 0.754, indicating that approximately 75% of the variation in GDP growth can be explained by the fiscal deficit.

The results show that there is a statistically significant negative relationship between GDP growth and fiscal deficit (b1 = -0.000069, $p < 0.001$). This means that for every one million increase in fiscal deficit, GDP growth decreases by 0.000069 units.

Based on the results of the linear regression analysis, we can conclude that there is a statistically significant negative relationship between GDP growth and fiscal deficit in India from 2010 to 2020. This means that as the fiscal deficit increases, GDP growth tends to decrease. The results of the analysis provide evidence to support the hypothesis that a high fiscal deficit can negatively impact economic growth.

## VII. RESEARCH FINDINGS

The findings of the regression analysis suggest that there is a statistically significant negative relationship between GDP growth and fiscal deficit in India from 2010 to 2020. This means that as the fiscal deficit increases, GDP growth tends to decrease. The results of the analysis provide evidence to support the hypothesis that a high fiscal deficit can negatively impact economic growth.

The coefficient of determination (R-squared) for the model is 0.754, indicating that approximately 75% of the variation in GDP growth can be explained by the fiscal deficit. This suggests that fiscal deficit is a significant factor that affects the economic growth of India.

The negative relationship between fiscal deficit and GDP growth may be due to several reasons. First, high fiscal deficits can lead to higher borrowing costs for the government, which can crowd out private investment and reduce economic growth. This happens because high borrowing by the government can increase the interest rates, which can discourage private investment.

Second, high fiscal deficits can also lead to inflation, which can reduce the purchasing power of the people and adversely affect the economy. Inflation can occur when the government prints more money to finance its deficits, which can increase the supply of money and reduce its value.

Third, high fiscal deficits can lead to a reduction in public savings, which can lead to lower investment and slower economic growth. This happens because a large portion of government expenditure is financed

by borrowing, which can reduce the amount of savings available for private investment.

The negative relationship between fiscal deficit and GDP growth is consistent with the findings of previous studies on the subject. For instance, a study by Asante et al. (2016) found that high fiscal deficits can negatively impact economic growth in Ghana. Another study by Chaudhry and Munir (2013) found that high fiscal deficits can lead to inflation and reduce economic growth in Pakistan.

However, it is important to note that fiscal deficits are not always detrimental to economic growth. For instance, in times of recession or economic downturn, government spending can help stimulate economic activity and growth. Additionally, government spending on social welfare programs and infrastructure development can also have positive effects on economic growth in the long run.

Therefore, it is important for policymakers to balance the need for fiscal responsibility with the need for economic growth. Fiscal deficits should be kept within reasonable limits and used judiciously to support economic growth, while also addressing social welfare concerns and investing in infrastructure.

One potential policy recommendation based on the findings of this study is to reduce the fiscal deficit by cutting unnecessary government expenditures and increasing revenue through taxation. This approach can help reduce the borrowing costs for the government and provide more resources for private investment, thereby promoting economic growth.

Another policy recommendation is to improve the efficiency of government spending by reducing wasteful expenditures and improving the targeting of social welfare programs. This can help ensure that government resources are used effectively and efficiently, which can lead to better outcomes in terms of economic growth and social welfare.

Furthermore, policymakers could explore alternative sources of financing for government expenditure, such as public-private partnerships or multilateral aid. These approaches can help reduce the burden of borrowing on the government and provide more resources for private investment, which can promote economic growth.

In conclusion, the findings of this study suggest that high fiscal deficits can negatively impact economic growth in India. Policymakers should consider reducing fiscal deficits to promote economic growth, while also balancing this with other economic goals such as social welfare programs and infrastructure development. It is important to note that fiscal deficits are not always detrimental to economic growth and should be used judiciously to support economic growth and other societal goals.

## VIII. SUGGESTIONS

Based on the research findings, some suggestions can be made to address the negative relationship between GDP growth and fiscal deficit in India:

Fiscal discipline: The government should prioritize fiscal discipline to control the fiscal deficit. This can be done by reducing unnecessary expenditure, increasing revenue collection through tax reforms, and promoting transparency in public spending.

Investment in infrastructure: To boost economic growth, the government can invest in infrastructure projects such as highways, airports, and ports. This can attract foreign investment, create job opportunities, and increase economic activity.

Promoting exports: The government can focus on promoting exports to increase foreign exchange earnings and reduce the trade deficit. This can be done by providing incentives to export-oriented industries, reducing the cost of doing business, and improving the quality of infrastructure.

Encouraging private investment: The government can encourage private investment by creating a conducive business environment, providing tax incentives, and reducing bureaucratic hurdles. This can increase the flow of investment, create jobs, and promote economic growth.

Structural reforms: The government can undertake structural reforms to increase the efficiency of the economy. This can be done by liberalizing markets, promoting competition, and reducing the regulatory burden on businesses. This can increase productivity, reduce costs, and promote economic growth.

Increase social spending efficiency: India has high levels of inequality, and the government can reduce it by spending more efficiently on social welfare programs. This can be done by reducing corruption, improving program design, and better targeting beneficiaries. This will not only reduce poverty and inequality but also promote economic growth by increasing human capital.

Increase transparency in public spending: To improve public trust in the government, it is important to increase transparency in public spending. The

government can do this by making public all information about government spending, including details of contracts and tenders. This will increase public confidence in the government and promote accountability.

In conclusion, addressing the negative relationship between GDP growth and fiscal deficit in India requires a comprehensive strategy that includes fiscal discipline, investment in infrastructure, promoting exports, encouraging private investment, undertaking structural reforms, increasing social spending efficiency, and increasing transparency in public spending. By implementing these measures, the government can promote sustainable economic growth and reduce the negative impact of the fiscal deficit on the economy.

## IX. LIMITATIONS

While this study has provided some valuable insights into the relationship between GDP growth and fiscal deficit in India, there are several limitations that should be acknowledged:

Limited data: The study used only ten years of data from 2010 to 2020. While this time period was sufficient for the purpose of this study, a longer time series could have provided more comprehensive insights.

Lack of control variables: The study only considered the relationship between GDP growth and fiscal deficit, without controlling for other variables that could have influenced the relationship. For instance, factors such as political instability, inflation, and exchange rates could have affected the results.

Causality: While the study found a statistically significant negative relationship between GDP growth and fiscal deficit, it does not establish causality. Other factors may be influencing both variables, and it is possible that the relationship between them is not direct.

Data quality: The study relied on secondary data sources such as the Reserve Bank of India and the Ministry of Finance. While these are reliable sources, there may be some issues with the quality and accuracy of the data.

Model specification: The study used a simple linear regression model to estimate the relationship between GDP growth and fiscal deficit. While this model was appropriate for the purpose of this study, more complex models could have provided a better fit to the data.

Generalizability: The findings of this study may not be generalizable to other countries or regions, as the economic conditions and policies may differ significantly.

Time lag: There can be a time lag between the fiscal deficit and its impact on GDP growth, which may not have been fully captured in the study.

Non-linear relationship: The relationship between GDP growth and fiscal deficit may not be linear, and other functional forms of the relationship could provide different results.

It is important to keep these limitations in mind when interpreting the findings of this study and when designing future research on the topic.

## XI. CONCLUSION

In conclusion, this study examined the relationship between GDP growth and fiscal deficit in India from 2010 to 2020. The study used a simple linear regression model to estimate the strength and direction of the relationship and found that there is a statistically significant negative relationship between GDP growth and fiscal deficit. This means that as the fiscal deficit increases, GDP growth tends to decrease.

The findings of the study provide evidence to support the hypothesis that a high fiscal deficit can negatively impact economic growth. This is consistent with the literature that suggests that a high fiscal deficit can lead to higher interest rates, inflation, and lower investment, which can negatively impact economic growth.

The study has important policy implications for India. It suggests that policymakers should focus on reducing the fiscal deficit to promote economic growth. This can be achieved through a combination of revenue-enhancing measures, such as increasing tax revenues and reducing wasteful expenditure, and expenditure rationalization, such as reducing subsidies and improving the efficiency of public spending.

However, the study has some limitations that should be noted. First, the study used secondary data sources, which may not be completely accurate. Second, the study only looked at the relationship between GDP growth and fiscal deficit and did not consider other factors that may impact economic growth, such as political instability and external shocks. Third, the study used a linear regression model, which assumes a linear relationship between the variables. In reality, the relationship between GDP growth and fiscal deficit may be more complex and nonlinear.

Future research can build on this study by addressing these limitations. For example, future studies can use primary data sources to obtain more accurate data on fiscal deficit and GDP growth. Future studies can also consider other factors that may impact economic growth, such as political stability and external shocks. Finally, future studies can use more advanced

statistical techniques, such as panel data analysis, to examine the relationship between GDP growth and fiscal deficit.

Despite these limitations, this study provides valuable insights into the relationship between GDP growth and fiscal deficit in India. The findings of this study suggest that reducing the fiscal deficit should be a priority for policymakers to promote economic growth in India.

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