

**UNVEILING THE NEXUS BETWEEN FISCAL DEFICITS, ECONOMIC GROWTH AND INFLATION:
AN EMPIRICAL STUDY OF INDIAN ECONOMY**

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Abstract: This paper examines the interaction between factors of fiscal deficit, economic growth, and inflation in the Indian economy based on empirical evidence between 1995 and 2022. The study is descriptive-analytical in nature based on second-hand information collected through secondary sources which include the Reserve Bank of India, Ministry of Finance and World Bank, based on 110 quarterly and annual macroeconomic observations. Three important variables, namely fiscal deficit (as % of GDP), GDP growth rate and consumer price index (CPI) will be analysed in low, moderate and high values in order to determine how these variables tend to repeat in different periods. According to the results, India mainly maintained the ability to work in a moderate range of fiscal deficit (4% to 6%) and as a result maintained GDP growth (4% to 7%) for most of the timeframe, and (mostly) had inflation rate between 4% to 6% by RBI. Indicatively, only 10.91% of the time, there was a combination of high fiscal deficit and high inflation implying vulnerability despite having experienced high macroeconomic figures in both parameters. This evidence is indicative of the fact that moderate fiscal activism has promoted growth mostly without resulting into out-of-control inflation and that the desirable fiscal and monetary response correlates in precision.

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1. INTRODUCTION

The issue of fiscal deficits has been one of the key considerations in emerging economies particularly with regards to the sustainable economic growth and price stability. The issue of maintaining fiscal discipline and promoting growth as well as keeping inflation down has been one of the avid policy dilemmas in India.

Unless the fiscal deficits are handled cautiously, they can cause inflationary pressures and macro economic imbalances, and any attempt to cut down on deficit spending can tend to limit the investment and social expenditure of the government. This paper aims at undertaking an empirical analysis of the complex interrelation that exist between fiscal deficit, economic growth and inflation in Indian economy. It tries to decipher whether growth is faster with an increase in fiscal or it induces inflation or whether there is a more complex thing remaining.

Through historical macroeconomics statistics, the paper seeks to explain the trends, find connections and insights into what kind of relations these entail over time. The results of the research related study should help in coming up with robust fiscal policies to

maintain a stable growth momentum and not aggravate the trends of inflation.

2. LITERATURE REVIEW

Asif et al. (2023) explored how energy price movements interacted with the two deficits; the fiscal and the current account deficit in India. Incorporating the use of both the linear and non linear econometric models, the research indicated that the re-existed as strong and one-sided impact of energy prices on the twin deficits.

In particular, a fiscal imbalance deteriorated more significantly due to sudden increases in energy prices compared to the mitigation of the fiscal imbalance associated with the same price reductions and indicated a nonlinear reaction of macro economic variables. The results highlighted the vulnerability of the Indian fiscal situation to any changes in energy markets globally and the importance of coordinated policy at the intersect between energy and fiscal policies in stabilizing the macroeconomics at large.

Azam and Khan (2022) investigated the threshold effects in the nexus between inflation and economic growth in a panel of both the developed and

the developing countries. The nonlinear panel regression analysis revealed strong evidence of inverted U-relationship implying that moderate positive relation existed between inflation and economic growth to a certain point, and thereafter it had a predominantly regressive effect. Their analysis confirmed that the threshold level is low in case of developing countries like India and it is going to be more prone to inflationary pressures. The study added rich empirical knowledge to the theory on the inflation growth trade-off and offered some information on how optimal targeting rates of inflation can be established in economy focused on growth acceleration.

Behera and Mallick (2022) carried out a profound empirical investigation to gauge the importance of fiscal deficit in determining the economic growth of all the Indian states. Through panel data analysis on several Indian states between a significant duration of time, they found out moderate fiscal deficits were related positively to economic growth particularly where money is committed towards productive activities including infrastructure and social welfare. Nevertheless, large fiscal deficits that were continuously recorded were identified to crowd out private investment and caused along-run fiscal pressure. Based on their results, they offered an indication that quality and composition of fiscal expenditures were significant ideas to dictate the growth at sub national level in India.

Chakraborty and Varma (2018) investigated macro economic implications of fiscal reforms and deficit financing with reference to inflation in India and to be more specific; after implementing liberalization. Using time-series econometric modelling, the analysis showed that fiscal deficit was linked to high inflation in the event that there was no fiscal discipline. Nevertheless, it discovered that fiscal reform meant to consolidate like the fiscal responsibility and budget managements act (FRBM) also played a role in controlling inflationary tendency.

Besides these good effects, the study warned against aggressive fiscal tightening stating that it might limit the ability of the public investment and this might lead to lessening the fiscal space required in things that promote growth. Their labour emphasized the need to have a balanced fiscal policy where there is no compromise on developmental priorities in the name of controlling deficits.

3. METHODOLOGY

This chapter presents the research methodology, data sources, sample size and methods of data analysis used in the study. Methodology is based in empirical analysis of economics, to determine fiscal deficit, inflation relationship and GDP growth in Indian scene for along term.

Research Design

In the article, a descriptive-analytical research design is used. It is an empirical form that is based on measurable and observable data of macro economy. The design will suit investigations of trends, relationships, and frequency distributions in historical data without taking experimental or survey data input. This is concerned with the organized classification and explanation of macroeconomic statistical figures with the aim of making policy-related generalizations.

Sample Size

The sample of 110 data points is a combination of quarterly and annual time-series on the basis of which the analysis is made. Such at a points range between the year 1995 to 2022, covering important stages of the Indian economy such as:

- Post-liberalization structural adjustments,
- The global financial crisis,
- The fiscal consolidation phase of the 2010s,
- The pandemic-induced fiscal expansion.

Being structured, the sample will provide the coverage both during the stable and turbulent macro-economic environment and will make the results more representative.

Analytical Techniques

The study applies the following analytical techniques:

- **Frequency Analysis:** Records the frequencies with which a specific classification of each variable has transpired (e.g., how often inflation exceeded 6%).
- **Percentage Distribution:** Converts frequency into relative proportions to provide a better impression and interpretation.

- **Trend Observation:** Trains on patterns and trends of macroeconomic data (e.g., whether high fiscal deficit coincided with low growth).
- **Concurrent Condition Mapping:** Determines the macroeconomic vulnerability situations by noting the concurrence of high level of inflation and large level of fiscal deficit.

Specialty, the methodology does not use the survey or primary data methods as such but only statistical observation based on indicators.

4. RESULT AND DISCUSSION

According to this part, the theory is represented by the empirical results of the study of 110 macroeconomic observations undertaken during the time period of 1995 to 2022. This is achieved by classifying important fiscal and economic indicators into specific zones; fiscal deficit, GDP growth rate and inflation (CPI) are placed in as specific range (low, moderate

and high) relationships and frequency of macroeconomic situations in the Indian economy are sought to be revealed.

These are presented in subsections that compare the results of a variable and at the same time try to evaluate macroeconomic vulnerability using the fact of high deficit and inflation occurring at the same time.

Distribution of Fiscal Deficit in India(% of GDP)

Table1 categorizes India's fiscal deficit as a percentage of GDP into three distinct ranges: Low (lessthan 4%),Moderate(4% -6%)and High(greater than6%).

It presents the frequency of percentage of occurrence of each range of deficits based on 110 observations of macroeconomic data, the frequency of the percentage distributions of the range of deficits in the reference period. This group is very useful in determining the trends of fiscal movements in the Indian economy over a period of time.

Table1:DistributionofFiscalDeficit(%of GDP)

FiscalDeficitRange(%ofGDP)	Frequency	Percentage(%)
Low(<4%)	28	25.45%
Moderate(4%-6%)	53	48.18%
High(>6%)	29	26.36%
Total	110	100.00%

As seen in the table, the level off is cal deficit between 4% and 6% accounted to 48.18% of the total observations and as such was the most prevalent level of fiscal deficit during the study period.

This implies that the Indian state has in general been functioning under a moderately expansionary fiscal policy. The situation with the low level of deficit (< 4%) was seen in 25.45% of cases found that reflected periods of fiscal austerity or stricter budgeting. On the

other hand, large fiscal deficits (> 6%) also occurred in 26.36% of the observations which are probably when the economy was in decline or policy-based expenditure e.g. stimulus against financial crises or the pandemic.

Figure 1 displays graphical results of the table 1. It is a figure representing percentage of each fiscal deficit category, namely low, moderate, and high out of total 110 observations. In this visual, one is able to get an immediate comparison of the frequency of each level of deficit occurring.

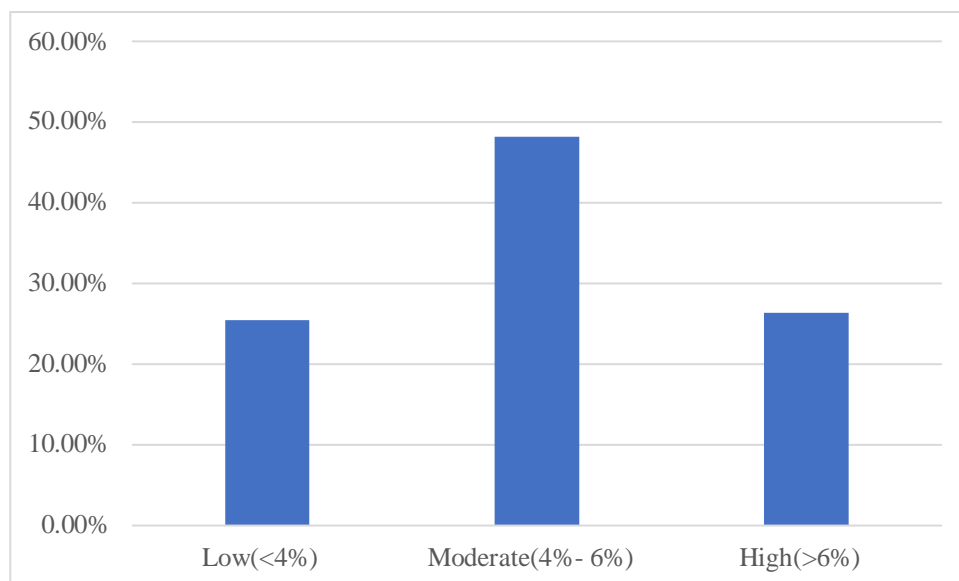


Figure1: Graphical Representation of the Percentage of Fiscal Deficit (% of GDP)

In Figure 1, the figure shows that the moderate range in the fiscal deficit (4% to 6%) is the most prevailing with the highest bar depicting close to 50% of all monitored observations. The low (< 4%) and high (> 6%) classes are almost the same in prevalence where both groups comprise about 25% of sample. The visual breakdown (i.e. the tendency towards maintaining a moderate-level fiscal deficit and the relative scarcity of high deficit spending behavior, as well as fiscal conservatism) is emphasized.

Distribution of Economic Growth Trends

Table 2 offers a representation of the 110 macroeconomic observations of the annual growth rates of GDP of India.

The growth rates are divided into three sections as follows; Low (<4%), Moderate (4% - 7%) and High (> 7%). This categorization assists in the determination of the degree of prevalence that the Indian economy has been going through in the period under investigation as far as low, moderate, or high growth is concerned.

Table2: Distribution of GDP Growth Rate (Annual%)

GDP Growth Range (%)	Frequency	Percentage(%)
Low (<4%)	21	19.09%
Moderate (4%-7%)	47	42.73%
High (>7%)	42	38.18%

Total	110	100.00%
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Table 2 demonstrates that most of the observations are in the moderate range (4% and 7%) of GDP growth which amounts to 42.73% of all the observations. This implies that throughout the majority of years or quarters, the Indian economy was experiencing a stable growth that was not very fast. Higher growth zone (> 7%) is right behind with 38.18% and they signify the phase of good economic performance, e.g. during the middle of the 2000s and in the post-reform period. Meanwhile, the low range (< 4%) was recorded in 19.09% of the cases, which could be the

slowdown periods like the global financial crisis or the COVID-19 pandemic.

Figure 2 is a bar graph that provides pictorial representation of the percentage distribution of annual growth rate of the GDPs by the three categories included: Low (less than 4%), Moderate (4% - 7%), and High (greater than 7%). The figure provides a direct visual representation of the frequencies of the occurrence of each range of economic growth using the same 110 macroeconomic data points analysed in Table 2.

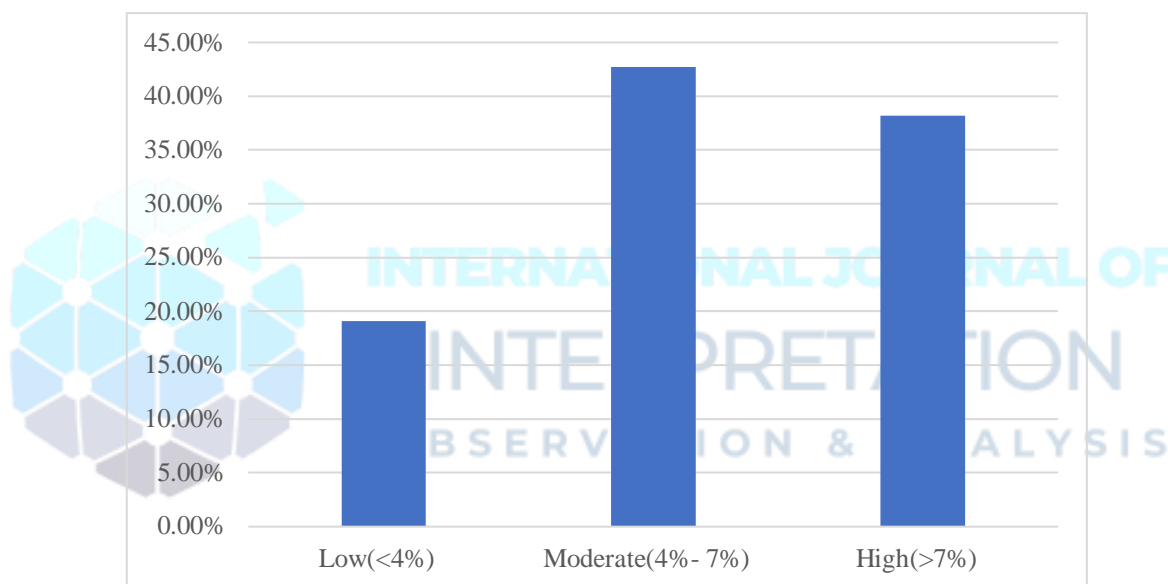


Figure 2: Graphical Representation of the Percentage of GDP Growth Rate (Annual%)

Figure 2 the Table 2 is valid as it visually clarifies the value that moderate levels of GDP growth of 4 to 7% was the most widespread and even has the highest bar that surpasses 40%. The high growth (>7%) range is near to the side, with a powerful economic performance with the large amount of periods. The bar corresponding to the low growth range (<4%) is the shortest, which makes it clear that relatively low rates of growth were comparatively not very common.

Price Index)

Table 3 displays the distribution of inflation rates in India, which is based on the Consumer Price Index (CPI), through 110 observations of macroeconomic data. The inflation percentages will be divided into three groups i.e. Low (< 4%), Moderate (4% - 6%) and High (> 6%). This category will help to understand how frequent were the situations of low, moderate, or high inflationary pressures in India in the investigated duration.

Distribution of Inflation Trends (Consumer

Table3:Distribution of Consumer Price Index(Inflation Rate)

Inflation Rate (CPI %)	Frequency	Percentage(%)
Low(<4%)	20	18.18%
Moderate(4% -6%)	55	50.00%
High(>6%)	35	31.82%
Total	110	100.00%

Table 3 indicates that there are 50.00% of data points in the area of moderate inflation range (4-6%). This implies that half the time, India maintained an inflation range that was control able and manageable as provided by the reserve bank of India in its agreed inflation range (4% + 2%). The huge level so inflation (>6) were experienced in 31.82% of the cases, which means that there were multiple occurrences of price instability- maybe attributed to supply shocks, fuel price volatility or food inflation. The low inflation range (< 4%), which is observed in 18.18% of cases, though,

demonstrates rather low rates of price increase. Figure 3 is a bar plot which gives a visual representation of the percentage proportionate distribution of the inflation rates within the three categories of CPI based on- Low (< 4%) Moderate (4% to 6%) and High (>6%) of the original 110 observations as used in Table 3. This figure gives a visual over view and allows are a able comparison of the frequencies of various trends in inflation with the priority being given to the prevailing inflation regime in the Indian economy during the study period.

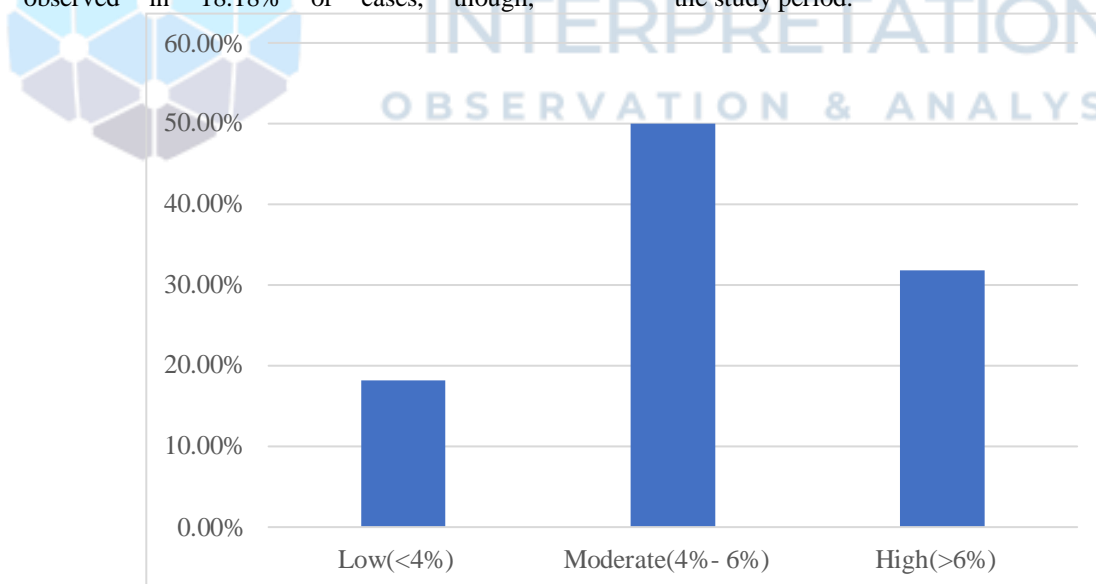


Figure3:Graphical Representation of the Percentage of Consumer Price Index (Inflation Rate)

Figure 3 shows clearly that the middle part of inflation (4%-6%), where the inflation was largely in focus, as depicted by the tallest bar at 50%. This is followed by the higher inflation category (> 6%) whose height of bar shows 31.82% of observations and then by the low inflation range (<4%) with the shortest bar (18.18%). The graph proves the fact that India has worked more in a moderate range of inflation and there were less but significant to occurrence of both high and low inflation periods. This is seen to reflect some form of effectiveness in the monetary policy to stagnate the prices as far as the macroeconomic problems were concerned.

Macro Vulnerability: High Fiscal Deficit and High Inflation Concurrence

This section will assess the level of macroeconomic vulnerability in the Indian Economy by checking the frequency with which high fiscal deficit (bigger than 6 % of GDP) and high inflation (greater than 6% in view of CPI) took place mutually. Having these two indicators high when taken together is mostly seen as symptoms of fiscal and monetary stress, and these factors can cripple the economical stability and confidence of investors. To evaluate this the data was separated into three categories, (i) when both fiscal deficit and inflation were on the higher levels,(ii) when only one of the two levels was higher and (iii) neither of the two levels were high in the period concerned.

Table4:Frequency of Years with Simultaneous High Fiscal Deficit and High Inflation (Macro Vulnerability Cases)

Condition	Frequency	Percentage(%)
Both FD >6% & Inflation>6%	12	10.91%
Any One (Either FD >6%or Inflation>6%)	38	34.55%
Neither High	60	54.55%
Total	110	100.00%

Table 4 shows that a combination of high fiscal deficit and high inflation also occurred in a small percentage of cases (that is 10.91%). The greater part of the periods (34.55%) had high values in just of the two variables, which means that they faced isolated macroeconomic pressures. In most cases (54.55), not only was the fiscal deficit below 6%,but also the inflation level was also below 6%.

This means that in most of the cases, the economy has not been experiencing any macroeconomic turmoil. The same findings indicate that India has not experienced either both fiscal stress in conjunction with inflationary stress simultaneously on a frequent basis or on a regular basis at all.

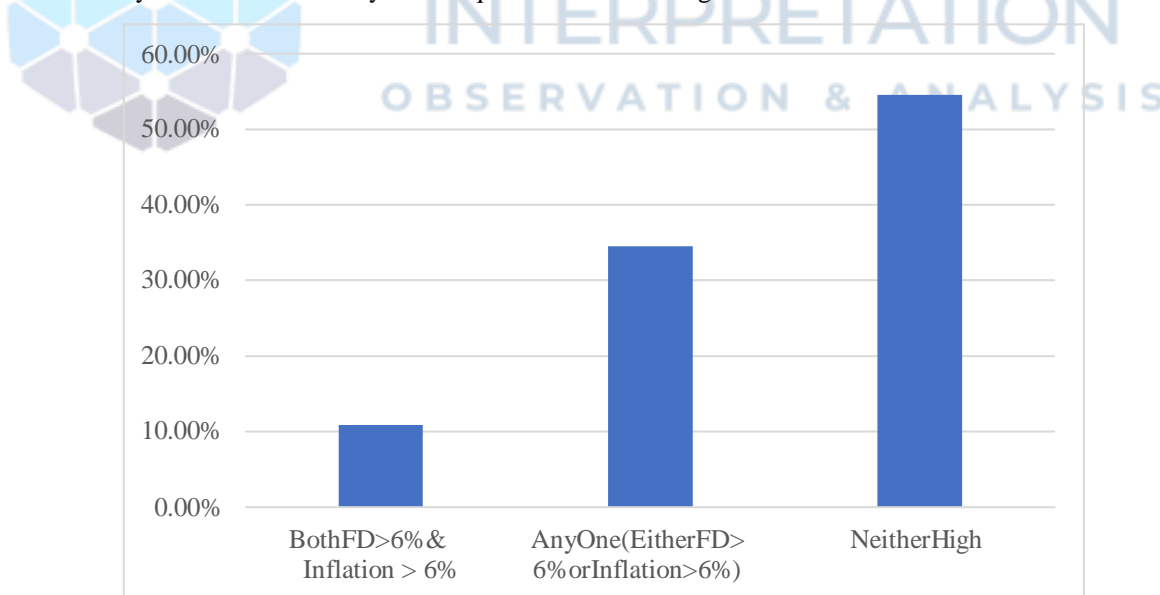


Figure4:Graphical Representation of the Percentage of Years with Simultaneous High Fiscal Deficit and High Inflation (Macro Vulnerability Cases)

Figure 4 also visually supports the trends in the data shown in Table 4. The biggest of the bars is that which marks those periods when both high fiscal deficit and high inflation were not being experienced; this is the indication of the fact

that India has managed to practice stability of a macroeconomic nature at over half of the observed times. The bar in the middle that represents that one unique and single variable was elevated shows that partial stress occurs

moderately. The shortest bar (reflecting high fiscal deficit and high inflation at the same time) demonstrates further scarcity of the conditioned dictated to this group of the pair of elements of the macro system.

5. CONCLUSION

In this empirical study of 110 macroeconomic data obtained between 1995 and 2022, the complex nature of the interaction between the fiscal deficit, economic growth, and inflation in the Indian economy is brought forth. Results show that India has largely managed to sustain a moderate fiscal deficit of 4% to 6%, not only with an increase in its GDP of 4% to 7% growth but also manageable rates of inflation in the target band of the Reserve Bank of India (RBI) which is between 4% and 6%. This was one of the factors that indicated macroeconomic vulnerability since the coincidence of high fiscal deficit and high inflation was quite uncommon, as it happened only in 10.91% of the observation simplifying that India has largely been spared of the dual stress on the economy. Although the world is experiencing external shocks like the COVID-19 pandemic, as well as the global financial crisis, fiscal interventions have not uniformly resulted in runaway inflation which indicates apt policy coordination. Such findings demonstrate that there is a need to ensure our fiscal prudence and monetary credibility, but permit fiscal flexibility at the context specific level to enable us to attain growth. The article finds that a moderated policy strategy on the fiscal front that is development oriented but sensitive to the possibilities so in inflation is prerequisite to maintaining macro-economic stability and long-term economic sustainability in India.

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