CONTRACTIONARY FISCAL POLICY AND PUBLIC INVESTMENT: An Empirical Analysis of Emerging Regional Growth Dynamics in India

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Santosh Kumar Das*

[***Abstract***: *In recent years, there has been growing consensus concerning the need for adopting the policy of fiscal consolidation in India. The contractionary fiscal policy, which has been at the core of the fiscal policy discourse, argues that there is a trade-off between fiscal deficit and economic growth. Higher deficit due to expansion of government economic activities tend to crowd out private investment through its impact on interest rate, hence hampering growth. The present paper examines the empirical foundation of the current policy discourse, and also underlines the crucial role of public investment in the process of economic growth in a developing country like India. Moreover, the empirical findings do not support the predominant thesis that fiscal deficit positively influences the rate of interest. Having empirically tested the above trade-off, the paper moves further to analyse the implications of the current fiscal policy discourse—which is opposed to fiscal expansion—for regional economic growth in India. We found that the policy of fiscal squeezing has resulted in reduction in the level of public investment in majority of the Indian states. Given the importance of public investment as a key driver of growth, decline in public investment is likely to adversely impact the growth potentials of the regional economies, depending on their growth dynamics.*]

Keywords: *Fiscal Policy, Public Investment, State Finance, Regional Economic Growth.*

1. Introduction

The effect of fiscal deficit on economic growth in terms of its impact on the rate of interest constitutes the core of fiscal policy debate in India, especially during the post liberalisation period. Overwhelmingly, policies which are fiscal in nature have been influenced by the above debate. The above argument had its origin in the financial reform that was implemented during the early 1990s. Doing away with subsidised funds to finance government deficits increasingly became a major aspect of the reform process in the financial sector, as fiscal deficit was seen as the major contributing factor behind the acceleration of interest rate (Goyal, 2004). Consequently, as part of reform process,

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the above argument was also extended to states in terms of deficit management and financing. As financial market gained prominence and reduction of deficit became central to the fiscal policy framework, the sources of deficit financing of states in India went through significant changes. Borrowing from the centre was no more an option for the states. States now largely rely on borrowings from market as the principal source of deficit financing, which is a cause of concern as it poses challenges to several aspects, especially declining public investment.With increasing interest cost burden as a result of market borrowing, the states compromised on capital expenditure that resulted in declining public investment. Given the fact that states are not similar in terms of the state of their economy, that is, they are at different stages of growth and development processes, declining public investment is a cause of concern. There are several "not so economically advanced" states that rely heavily on public investment as a source of growth and development. Declining public investment as an outcome of the changing pattern of deficit financing is likely to have adversarial impact on the growth outcome of the regional economies, depending on their growth dynamics.

Though, at policy level there has been consensus on the need for pursuing the policy of fiscal consolidation, the issue, however, has not yet settled, both from the theoretical and the empirical points of view. Predominantly, there are three sets of competing views in literature with regard to the fiscal deficit-interest rate nexus: Neoclassical, Keynesian and Ricardian (Chakraborty, 2002; Bernheim, 1989). The Neoclassical view argues that higher levels of fiscal deficit crowds out private investment through increased rate of interest which, in turn, retards economic growth. Countering the Neoclassicals, the Keynesians argue that fiscal deficit does not necessarily cause higher interest rate but even if it does, it would stimulate savings and capital formation; therefore, it is good for the economy. The third view is positioned in between the above two competing views. While the theoretical debate continues, the current fiscal policy embraced the arguments expressed by the first school of thought without examining its empirical foundation. The empirical foundation of the current policy discourse in regard to fiscal matters has been largely ignored and compromised, which has wider implications. The above proposition that widening of fiscal deficit causes or results in higher levels of interest rate needs to be examined given the coexistence of low interest rate and high fiscal deficit in India (Goyal, 2004). Similarly, no definite pattern seems to be emerging in terms of the relationship between economic growth and fiscal deficit in India.

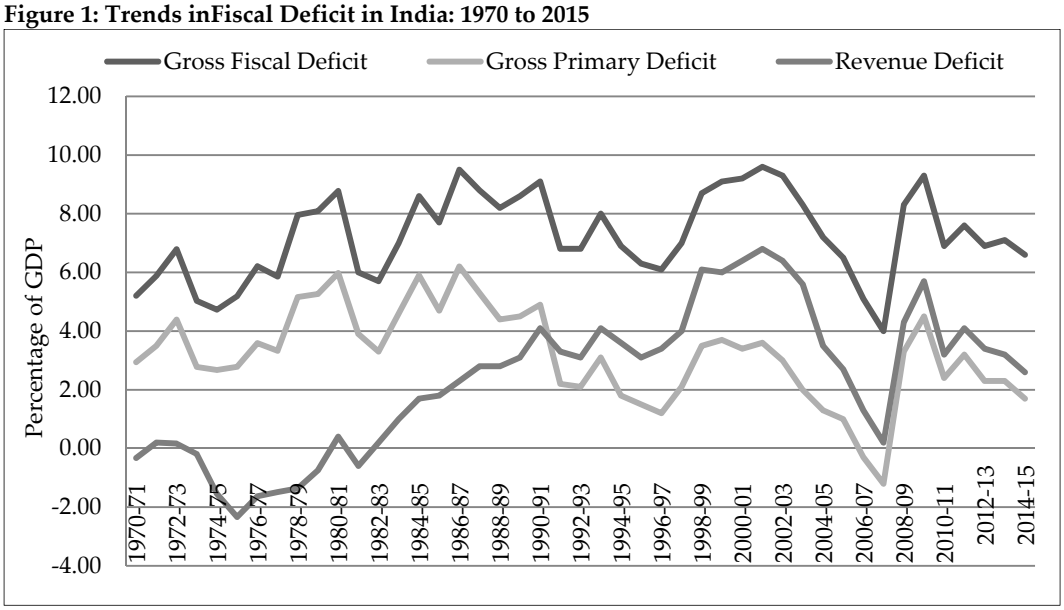
The present paper empirically explores the theoretical foundation of the current fiscal policy discourse by examining the nexus between fiscal deficit and the rate of interest in India. The paper also explores the implications of the current policy which opposes fiscal expansion for regional economic growth in India. The paper spreads over seven sections. Section 1 lays out the context of the study, followed by a discussion on the trends in fiscal deficit and economic growth in India in section 2. Section 3 briefly discusses the theoretical debates concerning the nature of relationship between fiscal deficit and interest rate. The econometric method and the estimation of determinants of interest rate

in India have been discussed in section 4. Section 5 explores the fiscal deficit-interest rate dynamics in the post reform period. Section 6 analyses implications of contractionary fiscal policy for public investment and regional growth in India. Section 7 provides the concluding remarks.

2. Fiscal Deficit and Economic Growth in India

The combined fiscal deficit of both the centre and the states seems to be on a decline in recent years after a short period of upward movement in the aftermath of financial crisis in 2009. The combined fiscal deficit, which is now a little more than 6.5 per cent in 2014–15, picked up from about 4 per cent in the year 2007–08 after a brief period of decline (*Figure 1*). Fiscal deficit shows a rising trend between 1970–71 and 1986–87. For 16 consecutive years, the combined fiscal deficit as percentage of GDP (Gross Domestic Product) kept increasing. It was about 5 per cent of the GDP in 1970–71 and reached its peak level of 9.5 per cent of GDP in 1986–87. Thereafter, for a brief period, it showed a downward trend and reached 6 per cent of GDP in 1996–97. Again for a short period it went up to 9.6 per cent in 2001–02, but declined subsequently until 2007–08. However, the recent rise in the combined fiscal deficit is significant in terms of its share to GDP.

Figure 1: Trends inFiscal Deficit in India: 1970 to 2015



Note: Combined (Centre's GFD + State's GFD).
Source: Calculations based on RBI data.

The trend analysis of combined gross fiscal deficit and the GDP growth rate since 1970–71 suggests that there seems to be no meaningful pattern in terms of the relationship emerging between the above two variables (*Table 1*). We can see high growth with high

fiscal deficit and also high growth with low fiscal deficit. On the other side, we have figures that exhibit low growth rate with low fiscal deficit and low growth rate with high fiscal deficit. A similar pattern emerges from the comparison between GDP growth rate and fiscal deficit with one year lag. It has been argued that previous year's fiscal deficit rate affects the current year's GDP growth. The pattern of association between GDP growth rate and fiscal deficit with one year lag seems to follow a similar path as explained above. Therefore, we can say that no definite pattern seems to be emerging to arrive at a conclusion on the relationship between GDP growth and fiscal deficit in India. But certainly, the above analysis suggests the absence of any robust relationship between the above two variables with respect to the argument that higher fiscal deficit tends to result in lower levels of economic growth.

Table 1: Trends in Fiscal Deficit (Combined) and GDP Growth in India

Year	*GDP Growth Rate*	*GFD (% of GDP)*	*GFD.L1*	*Year*	*GDP Growth Rate*	*GFD (% of GDP)*	*GFD.L1*
1970–71	5.01	5.2		1992–93	5.36	6.8	6.8
1971–72	1.01	5.88	5.2	1993–94	5.68	8	6.8
1972–73	-0.32	6.79	5.88	1994–95	6.39	6.9	8
1973–74	4.55	5.03	6.79	1995–96	7.29	6.3	6.9
1974–75	1.16	4.73	5.03	1996–97	7.97	6.1	6.3
1975–76	9	5.19	4.73	1997–98	4.3	7	6.1
1976–77	1.25	6.22	5.19	1998–99	6.68	8.7	7
1977–78	7.47	5.86	6.22	1999–00	8	9.1	8.7
1978–79	5.5	7.96	5.86	2000–01	4.15	9.2	9.1
1979–80	-5.2	8.09	7.96	2001–02	5.39	9.6	9.2
1980–81	7.17	8.78	8.09	2002–03	3.88	9.3	9.6
1981–82	5.63	6	8.78	2003–04	7.97	8.3	9.3
1982–83	2.92	5.7	6	2004–05	7.05	7.2	8.3
1983–84	7.85	7	5.7	2005–06	9.48	6.5	7.2
1984–85	3.96	8.6	7	2006–07	9.57	5.1	6.5
1985–86	4.16	7.7	8.6	2007–08	9.32	4	5.1
1986–87	4.31	9.5	7.7	2008–09	6.72	8.3	4
1987–88	3.53	8.8	9.5	2009–10	8.59	9.3	8.3
1988–89	10.16	8.2	8.8	2010–11	8.91	6.9	9.3
1989–90	6.13	8.6	8.2	2011–12	6.69	7.6	6.9
1990–91	5.29	9.1	8.6	2012–13	4.47	6.9	7.6
1991–92	1.43	6.8	9.1	2013–14	4.74	7.1	6.9

Source: Calculations based on RBI data.

3. Budget Deficit, Interest Rate and Economic Growth: Theory and Evidence

As mentioned earlier, broadly, three countering schools of thought concerning the effects of budget deficit on interest rates can be found in literature: Neoclassical, Keynesian and Ricardian (Chakraborty, 2002; Bernheim, 1989). According to Neoclassical school, any increase in fiscal deficit results in an increment in the rate of interest, which has a negative impact on private investment. Higher rates of interest caused by an increase in fiscal deficit tend to crowd out private investment. On the other side, contrary to the Neoclassicals, the Keynesians argue that even though an increase in fiscal deficit results in higher rates of interest, such an increase would stimulate savings and capital formation. Therefore, fiscal deficit is not always bad as argued by the Neoclassicals. There is another view which positions itself in between the Neoclassical and Keynesian perspective, known as Ricardian Equivalence. According to the Ricardian Equivalence Theorem, deficits merely postpone taxes, thus tax financing and debt financing of deficits will have a similar impact on the economy (Chakraborty, 2012).

The empirical finding with regard to the possible impact of fiscal deficit on interest rate has been mixed. While studies by Cebula (1997) and Correia-Nunes and Stemitsiotis (1995) suggest that there exists a positive relationship between government budget deficit and real interest rate, studies by Evans (1985) and Kulkarni and Erickson (1996) did not find a similar result. They found that budget deficit does not influence real interest rate positively. Empirical studies by Chakraborty(2002 and 2007) also concluded that fiscal deficit does not result in higher interest rate in India.

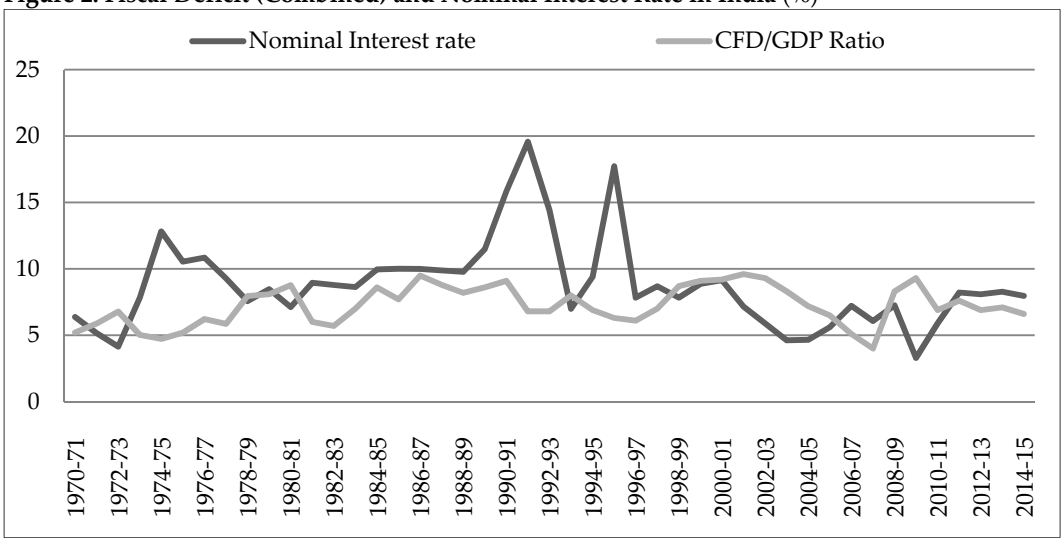
4. Fiscal Deficit and Interest Rate in India

The nature of relationship between fiscal deficit and interest rate as embedded in the dominant discourse would suggest that both variables should move together in one direction, exhibiting a positive relationship. However, the pattern that seems to be emerging by plotting the above two variables is not as per the predictions of the dominant argument (*Figure 2*). Between 1970 and 2015, on several occasions, we see coexistence of an inverse relationship between the two variables. We can see high interest rate with low fiscal deficit. In the absence of any clear pattern, it becomes essential to examine the relationship between the above two variables statistically.

4.1 Determinants of Interest Rate

As discussed earlier, one set of empirical study suggests that higher fiscal deficit results in higher interest rate (Orr, Adrian *et al*., 1995; Konadu-Adjei*et al*, 2012; Goyal, 2004); on the other side, a counter argument of Keynesian origin challenges that budget deficit does not necessarily push the interest rate up (Patnaik, 2001; Chakraborty, 2002; Das, 2004). These studies suggest that fiscal deficit does not always cause higher levels of interest rate in India (Chakraborty, 2002 and 2012). Therefore, given the mixed empirical

Figure 2: Fiscal Deficit (Combined) and Nominal Interest Rate in India (%)



Note: Call money rate has been proxied for nominal interest rate.
Source: Reserve Bank of India.

evidence and lack of consensus at theoretical level concerning the relationship between budget deficit and interest rate, it should be left for empirical validation so far as the casual relationship between these two is concerned. A part from fiscal deficit, the rate of inflation, capital inflow and money supply also influence interest rates in a developing country like India. Higher inflation is likely to bring about higher interest rates. As the purchasing power of the borrowed fund declines owing to the acceleration in the rate of inflation, interest rate goes up. It is because the lenders tend to protect their funds from erosion due to high inflation. The higher the money supply, the lower will be the rate of interest as supply of funds would be abundant against the demand for funds. Money supply also reflects liquidity in the system. Capital inflow is likely to reduce interest rate if the net inflow is positive and growing over time, given the fact that net inflow from external sources goes up to due to the prevalence of relatively high interest rate. However, going by the demand and supply logic, if the net inflow in volume goes up on a sustained basis, it is likely to reduce the domestic interest rate.

4.2 Estimation: Determinants of Interest Rate

The estimation of the determinants of interest rate involves two stages of econometric analysis as the study uses time series data for estimation purpose. First, the unit root test to examine if the time series data exhibit any trend. If it does exhibit a trend (non-stationary in mean), unit root can be removed from the series by taking the first difference of the variables and the series can be made stationary. Second, after examining the order of integration of the variables, an appropriate econometric technique can be arrived at to estimate the interest rate function.

4.2.1 Unit Root Test

The present study uses time series data for the purpose of analysis. However, in many cases, the economic time series data exhibit trending behaviour (non-stationary in the mean).The presence of a trend in economic time series data results in Spurious[1] or Nonsensical relationship when one Non-stationary time series is regressed against one or more Non-stationary time series. This is because usually a time series data analysis employs autoregressive (AR), moving average (MA), and seasonal dynamic processes and often has time-dependent moments (e.g., mean, variance). In a time series data, the mean or variance of many time series increases over time. Therefore, the trend has to be removed from the time series data in order to make it stationary.

The Augmented Dicky-Fuller (ADF) test has been conducted to examine the presence of unit root in the time series variables. Accordingly, the following regression equation has been estimated.

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^{n} \alpha_i \, \Delta Y_{t-i} + \varepsilon_t$$

where, ΔY_t = First differenced value of Y, δY_{t-1} = First lagged value of Y, $\sum_{k=1}^{n} \alpha_i \, \Delta Y_{t-i}$ = 1st to n th lagged of first differenced of values of Y.

4.2.2Cointegration: ARDL Method

The econometric literature offers several alternative methods to determine the dynamic interactions and the long-run relationships between two or more time series variables. However, the method introduced by Pesaran *et al*. (2001) seems to be superior and easy to use in comparison to the rest. The bounds testing approach which was introduced by Pesaran *et al*. (2001) has several advantages over the remaining widely used methods of Engle and Granger (1987) and Johansen and Juselius (1990). These include, first, the bounds test approach which can be applied irrespective of the order of integration of the regressors – I(0), I(1) or mutually cointegrated (Esso and Keho, 2010). Second, once the order of the ARDL (Autoregressive Distributed Lag) model is established, it can be estimated by the simple OLS method. Third, this technique is more appropriate in case of small sample size (Pesaran *et al*., 2001).

The ARDL bounds testing approach is based on Unrestricted Error Correction Model (UECM) technique. It involves two stages. The first step involves estimating the ARDL model using the Ordinary Least Squares (OLS) technique in order to test for the existence

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[1] If the $R^2$of the regression is greater than the Durbin-Watson Statistic, and if the residual series of the regression has a Unit Root. Granger and Newbold (1974) found in their study that if two independent, non-stationary series are regressed on each other, the chances for finding a spurious relationship are very high.

of a long-run relationship among the relevant variables. After the establishment of the long-run relationship or cointegration, the second stage of the testing involves the estimation of the long-run coefficients [which represent the optimum order of the variables after selection by Akaike Information Criteria (AIC) or Schwarz Bayesian Criterion (SBC) followed by the estimation of the associated error correction model in order to determine the adjustment coefficients of the error correction term. The short-run effects can be captured by the coefficients of the first differenced variables in the UECM model (Odhiambo, 2011).

Interest Rate Function Equation

$$\Delta NRS = \beta_0 + \alpha_1 GFDGDP_{t-1} + \alpha_2 CFGDP_{t-1} + \alpha_3 MGDP_{t-1} + \alpha_4 INFL_{t-1} + \sum_{i=1}^{p} \tau_i \Delta \mathrm{GFDGDP}_{t-i} + \sum_{i=1}^{p} \varphi_i \, \Delta \mathrm{CFGDP}_{t-i} + \sum_{i=1}^{p} \rho_i \, \Delta \mathrm{MGDP}_{t-i} + \sum_{i=1}^{p} \forall_i \, \Delta \mathrm{INFL}_{t-i} + \varepsilon_t$$

In the above equation, the first part of the equation (α_s) corresponds to the long-run relationship, while the terms with summation signs represent the error correction dynamics of the model.

The first step is to examine the presence of cointegration in the ARDL model. The cointegrating relationship can be established by conducting the F test for the joint test significance of the coefficients. According to the bounds testing procedure, if the calculated value of F statistics is higher than the upper critical value, we can reject the null hypothesis of no cointegration. On the other side, if the computed value of F statistics falls below the lower critical value, we accept the null hypothesis of no cointegration. And, if the calculated value of F statistics falls between the upper and lower critical values, then the result is inconclusive. We cannot conclude anything concretely about the presence of cointegration.

4.3 Analysis of Results

4.3.1 Order of Integration of the Variables

The ADF test has been conducted to examine whether there exists a unit root in each variable. The results show that the variables are a mix of both integrated of order I(1) and I(0). Variables, integrated of order I(0) are stationary at level. And, variables that exhibited a trend or unit root have been detrended by taking the first difference.

It can be seen that except money supply, the rest of the variables are stationary at level and therefore integrated of order I(0). Money is found to have unit root and therefore is integrated of order I(1) (*Table 2*).

Table 2: Results of Augmented Dicky Fuller Test for Unit Roots in Various Variables

Variables	*DF Test*	*Order of Integration*
GFDGDP	-2.302**	I(0)
NRS	-3.118**	I(0)
INFL	-4.742*	I(0)
CFGDP	-4.009*	I(0)
M3GDP	1.263	I(1)
DM3GDP	3.848*	

Note: *, **, & *** denote that the DF test statistics reject the null hypothesis of non-stationarity of the variables at 1%, 5% and 10%confidence level (critical value)respectively; GFDGDP = Ratio of Gross Fiscal Deficit to GDP, NRS =Short-term nominal interest rate, INFL = Inflation, CFGDP = Capital Flow to GDP Ratio, M3GDP =Broad Money to GDP Ratio; Series D denotes first difference.

Source: Author's calculation.

4.3.2 Analysis of Interest Rate Function

As explained in the earlier section, the first step is to examine the presence of cointegration in the ARDL model that was used to estimate determinants of interest rate in India. As shown in *Table 3*, the F test for the joint test significance of the coefficients does not confirm the presence of any cointegrating relationship as the calculated value falls below the critical value as per the bounds testing.

Table 3: Interest Rate Function: Bounds F-test Result for Cointegration (1970 to 2011)

Dependent variable	*Function*				*F-test statistics*	
NRS	F_{NRS}(NRS / GFDGDP,INFL, CFGDP, MGDP)				1.097	
Asymptotic Critical Values						
Pesaran *et al*. (2001), p.301, Table CI(iii) Case III	1%		5%		10%	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	4.29	5.61	3.23	4.35	2.72	3.77

GFDGDP = Ratio of Gross Fiscal Deficit to GDP, NRS =Short-term nominal interest rate, INFL = Inflation, CFGDP = Capital Flow to GDP Ratio, MGDP =Broad Money to GDP Ratio.

Source: Author's calculation.

The computed value of F statistics falls below the lower critical value at 10 per cent significance level. Therefore, we can conclude that there is no cointegrating relationship among the variables, presented in the interest rate function. The absence of any cointegrating relationship suggests that there exists no long-run relationship among the variables as presented in the interest rate function.

The long-run coefficient of the ARDL model shows that except money supply, the rest of the variables suggest a positive relationship with the short-term nominal rate of interest (*Table 4*). Gross fiscal deficit and inflation are found to be positively associated with the

nominal rate of interest. However, none of the estimated coefficients is found to be statistically significant. Therefore, from the above result we cannot firmly conclude that budget deficit is the reason behind higher levels of interest rate in India.

Table 4: Interest Rate Function: Long-run Coefficient Estimated from Selected ARDL(1,1,0,1) based on SCB

Dependent variable = NRS

Regressor	*Coefficient*	*T-Ratio[Prob]*
GFDGDP	63.2595	1.4664[.152]
INFL	.31274	1.1802[.247]
CFGDP	1.0208	1.0377[.307]
MGDP	-16.5922	-1.9025[.066]
C	7.2761	1.5003[.143]

Note: *** denotes significance level at 10%. GFDGDP = Ratio of Gross Fiscal Deficit to GDP, NRS =Short-term nominal interest rate, INFL = Inflation, CFGDP = Capital Flow to GDP Ratio, MGDP =Broad Money to GDP Ratio.

Source: Author's calculation.

Having failed to establish any statistically meaningful relationship in the long run, we moved further to examine the short-run relationship among the variables as mentioned in the interest rate function. The error correction term ecm(-1) suggests that the model is statistically significant and the sign of the coefficient seems to be correct (*Table 5*). It implies that the model as a whole is adjusting towards its long-term equilibrium level. Fiscal deficit is found to be inversely associated with the interest rate variable and is statistically significant at 10 per cent level of significance. Similarly, capital flow is exhibiting an inverse relationship and is statistically significant at 5 per cent. Inflation is found to be positively associated with the rate of interest. From the short-run analysis, it is found that interest rate and fiscal deficit moved together inversely in India during the study period.

Table 5: Error Correction Representation for Interest Rate Function: Selected ARDL (1,1,0,1) Model based on SCB

Dependent variable = dNRS

Regressor	*Coefficient*	*T-Ratio[Prob]*
dGFDGDP	-68.7775	-1.9650**[.058]
dINFL	.14243	1.2755[.211]
dCFGDP	-.35577	-1.1110[.274]
dMGDP	-7.5563	-1.8162***[.078]
dC	3.3136	1.3378[.190]
ecm(-1)	-.45541	-3.6245*[.001]

R-Squared .47135	R-Bar-Squared .37523
S.E. of Regression 2.4881	F-stat. F(4, 35) 7.3559[.000]
Mean of Dependent Variable -.015750	S.D. of Dependent Variable 3.1479
Residual Sum of Squares 204.2967	Equation Log-likelihood -89.3714
Akaike Info. Criterion -96.3714	Schwarz Bayesian Criterion -102.2825
DW-statistic 2.0086	

Note: *, ** and *** denote significance level at1%, 5% and 10% respectively; GFDGDP = Ratio of Gross Fiscal Deficit to GDP, NRS =Short-term nominal interest rate, INFL = Inflation, CFGDP = Capital Flow to GDP Ratio, MGDP =Broad Money to GDP Ratio; Series **d** denotes first difference.
Source: Author's calculation.

The regression equation derived from the interest rate function passed the diagnostic tests against serial correlation, functional form misspecification, and non-normal errors, but failed to pass the hetroschedasticity test at 5 per cent. However, as explained by Shrestha and Chowdhury (2005) and Frimpong and Oteng-Abayie (2006), since the ARDL equation consists of variables of both orders of integration,i.e.I(0) and I(1), it is natural to detect hetroschedasticity.

Table 6: Interest Rate Function: Diagnostics Tests Results for ARDL-VECM Model

LM Test Statistics	*Results*
Serial Correlation:CHSQ(1)	0.008563[0.926]
Functional Form: CHSQ(1)	0.11998[0.729]
Normality: CHSQ(2)	4.0972[0.129]
Hetroscedasticity: CHSQ(1)	3.4882[0.062]

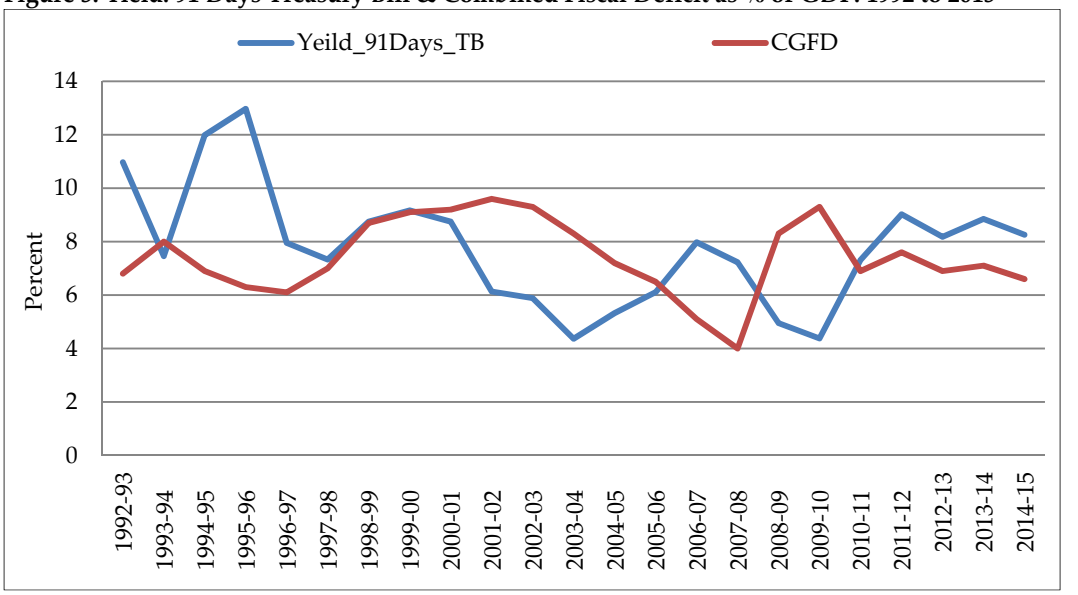
Source: Author's calculation.

5. Fiscal Deficit and Interest Rate: A Closer Look at the Post Reform Period

As explained in the previous section, statistically, in the long run there seem to be absence of any meaningful relationship between fiscal deficit and interest rate in India. On the contrary, we see an inverse relationship between the above two variables which is evident from the results drawn from the Error Correction Model (ECM). In order to gain clarity, the relationship between the above two variables has been examined for the post reform period. There is also another logic that calls for a closer look at the post reform period. It is because, prior to financial reforms, the interest rate structure was largely administratively determined. With the introduction of liberalisation policies in the financial sector, the process of financial deregulation began that somehow included a market determined interest rate. Therefore, a close look at the post reform period by examining the relationship between fiscal deficit and interest rate would enable better understanding of the interaction between the above two variables.

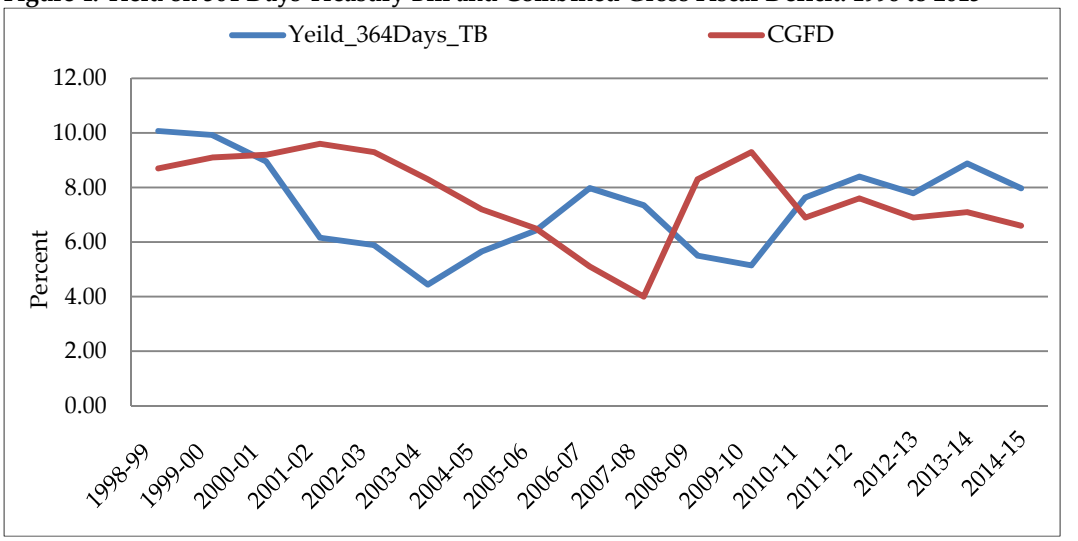
A closer look at the post reform period suggests that an increase in the rate of interest does not necessarily result in higher levels of fiscal deficit. We can see an inverse relationship between the above two variables in different phases beginning early years of financial reforms (*Figures 3 and 4*). On several occasions, the fall in the interest rate as proxied by Treasury Bill rates is much faster than the fall in deficits. Between 2006 and 2011, we can observe two different sets of pattern emerging from the above analysis.

Figure 3: Yield: 91 Days Treasury Bill & Combined Fiscal Deficit as % of GDP: 1992 to 2015



Source: Calculations based on RBI data.

Figure 4: Yield on 364 Days Treasury Bill and Combined Gross Fiscal Deficit: 1998 to 2015



Source: Source: Calculations based on RBI data.

First, declining fiscal deficit with increasing interest rate, and second, rising fiscal deficit with falling interest rate.

Having done the graphical analysis of the pattern of relationship between interest rate and fiscal deficit in India, the following OLS regression equation has been estimated to quantify the dimension of the above relationship.

$$NRS_t = \propto_0 + \propto_1 GFDGDP_t + \propto_2 INFL_t + \propto_3 CFGDP_t + \propto_4 MGDP_t + \varepsilon_t$$

where, GFDGDP = Ratio of Gross Fiscal Deficit to GDP, NRS =Short-term nominal interest rate (average yield on 91 days Treasury Bill), INFL = Rate of Inflation, CFGDP = Capital Flow to GDP Ratio, MGDP =Broad Money to GDP Ratio.

The result of determinants of interest rate during the post reform period suggests a negative relationship between the rate of interest and fiscal deficit in the post reform period (*Table 7*). However, the relationship is not statistically significant. Other variables like money supply, inflation and capital inflow are also found to be inversely associated with the rate of interest.

Table 7: OLS Result-Interest Rate Function: 1990 to 2011

Dependent Variable – NRS	*R Square - 0.686*	
Regressor	*Coefficient*	*T-Ratio [Prob]*
GFDGDP	-0.571568	-1.17 [0.258]
INFL	0.546587	2.16** [0.047]
CFGDP	-0.798381	-1.68 [0.113]
MGDP	-0.1648092	-4.38 **[0.012]
Constant	22.87489	2.83 [0.012]

Note: *denotes significance level at 1%; GFDGDP = Ratio of Gross Fiscal Deficit to GDP, NRS =Short-term nominal interest rate (average yield on 91 days Treasury Bill), INFL = Rate of Inflation, CFGDP = Capital Flow to GDP Ratio, MGDP =Broad Money to GDP Ratio.

Source: Author's calculation.

The econometric analysis conducted for both the time periods—the study period for long-run analysis (1970 to 2011) and the post reform period (1990 to 2011)—suggest that statistically no definite relationship seems to be emerging from the above exercise. The results of the long-run analysis based on the estimation of the ARDL model that suggest a positive relationship between fiscal deficit and rate of interest, however, is found to be statistically not significant. On the contrary, the results derived from the OLS estimation suggest that there exists an inverse relationship between fiscal deficit and interest rate during the post reform period. However, very similar to the earlier case, the relationship between the above two variables is statistically not significant.

6. Contractionary Fiscal Policy: Implication for Public Investment and Regional Growth in India

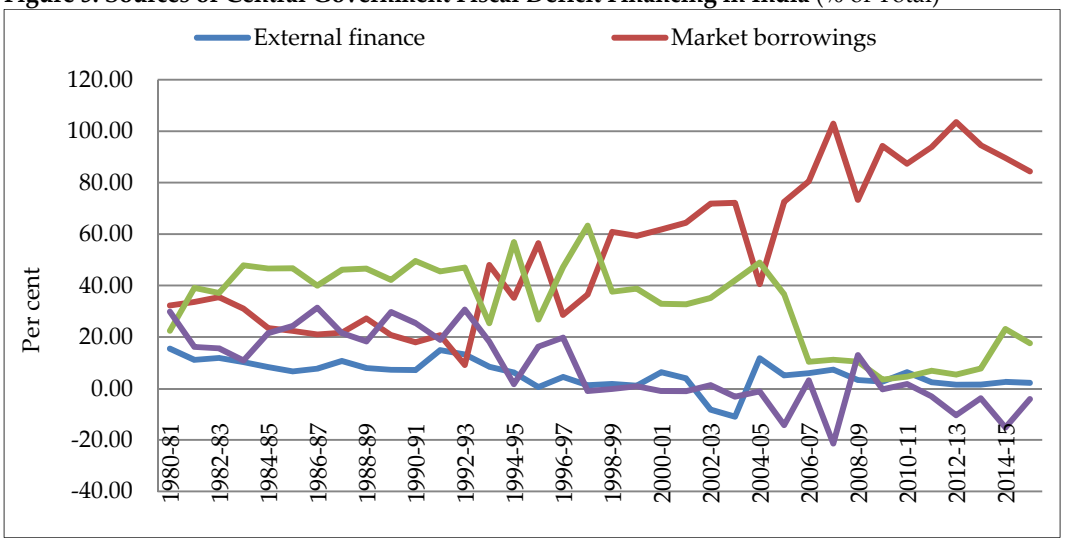
The present section studies the implications of contractionary fiscal policy for public investment in India, especially with respect to the major Indian sates. As discussed, following financial reform, the financing pattern of fiscal deficits of state governments has changed significantly. With central loans no more an option for borrowing, the state governments are relying on market borrowings at market rate of interest to meet their respective deficits. With rising interest cost burden, the states have cut down their borrowings, which have resulted in reduced capital expenditure. Following reform, both capital outlay and capital expenditure have come down significantly (during 1990s) in majority of the Indian states. The basic idea behind promoting market as the predominant source of finance for the states in India is to reduce the deficit levels of state governments. The argument behind reducing fiscal deficit was that the high fiscal deficit raises interest rate, which in turn crowds out private investment and thus hurts growth. The present section examines the implications of this contractionary fiscal policy for regional economic growth through its impact on public investment in major Indian states.

6.1 Changing Pattern of State's Fiscal Deficit Financing and Pattern of Public Expenditure in India

The composition of sources of fiscal deficit financing of the central government has undergone a significant change since the late 1990s. The share of market borrowing as a source of financing fiscal deficit of the central government has gradually become prominent—the share has gone up from about 32 per cent in 1980–81 to about 100 per cent in 2012–13, and 84 per cent in 2014–15 (*Figure 5*). Since 1998–99, market borrowing has become the principal source of deficit financing for the central government. Other sources like external finance have decreased significantly.

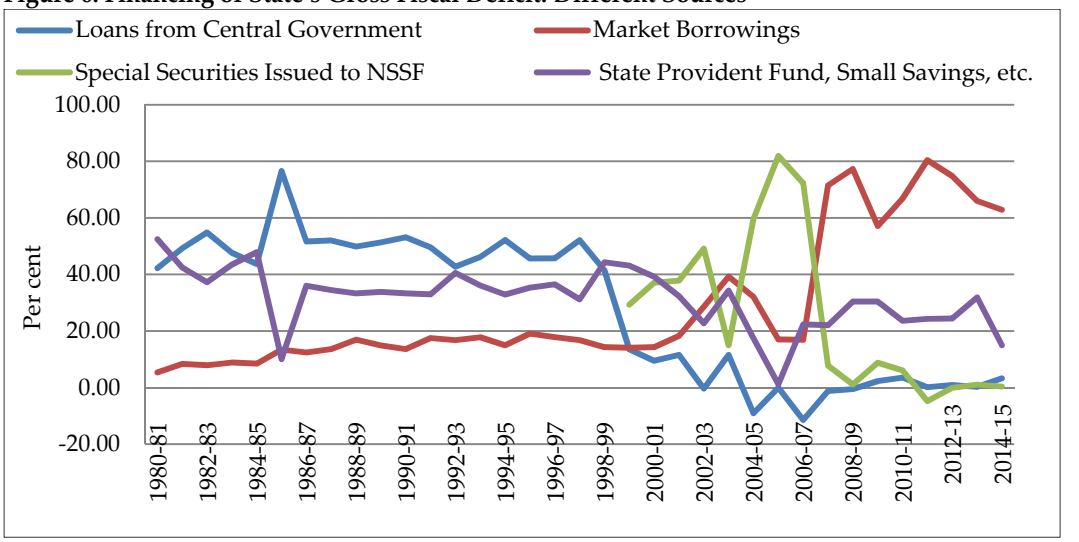
Similarly, the financing pattern of a state's gross fiscal deficit has also undergone significant change, especially during the last decade. Market borrowing as a source of financing fiscal deficit has replaced loans from the central government as the principal source of finance. The share of market borrowing as a source of financing state's fiscal deficit was about 5 per cent in 1980–81 and has gone up to about 80 per cent in 2012–13. On the other side, the share of loans from the centre—the principal source of finance till the mid-1990s—has gone down from 42.2 per cent in 1980–81 to 3.4 per cent in 2014–15. The shares of other sources like state provident fund and small savings have come down from about 52.5 per cent in 1980–81 to 15 per cent in 2014–15 (*Figure 6*).

Figure 5: Sources of Central Government Fiscal Deficit Financing in India (% of Total)



Source: Calculations based on RBI data.

Figure 6: Financing of State's Gross Fiscal Deficit: Different Sources



Source: Calculations based on RBI data.

States are now increasingly relying on market borrowing as a source of finance. Since early 2000s, loans from centre as a source of finance have decreased significantly. Market borrowings have become the predominant source of finance. Loans from centre as a source of finance declined significantly during the late 1990s and thereafter states relied on state provident fund as a source of finance. However, in recent years, it has started declining, thereby forcing states to borrow from the market in order to finance their fiscal deficit.

As discussed in the earlier section, while market borrowing has become the predominant source of finance for both the central and the state governments, over time it is the states that stand to lose on many counts due to the changing nature of financing pattern. A comparison between the centre and the states shows that due to the financial dependence of states on different sources including on the centre which is structural in nature, the current pattern of financing makes the states' more indebted on the one hand and compels them to cut down their expenses, including developmental ones though increased interest cost payments on the other.

During the last decade there has been substantial growth of market borrowings both by the states and the centre. However, growth is significantly higher for the states (*Table 8*). Given the financial freedom available to the centre, it enjoys, to a large extent, a certain degree of flexibility so far as diversifying its sources of borrowing and ways of paying back borrowings and interest cost is concerned. On the other side, states do not have that comfort since for them both the source of finance and the ways to pay interest cost and debts are so limited.

Table 8: Average Annual Growth of Market Borrowings: Centre and States (%)

Period	*Centre*	*State*	*Combined*
1980–81 to 1989–90	3.80	15.37	5.53
1990–91 to 1999–00	31.39	9.63	25.82
2000–01 to 2010–11	14.60	33.59	15.00

Source: Calculations based on RBI data.

It is also a matter of concern that after the introduction of economic reforms, states have been borrowing—especially on a consecutive basis in the last two decades—at a higher rate of interest in comparison to the centre. The years after reform witnessed a high interest rate regime (*Table 9*). The interest rate for state's borrowing almost doubled. The nominal interest rate charged for state's borrowing was 6.75 per cent in 1980–81, which more than doubled in the year 1995–96. However, there has been a significant decline in the last few years.

A higher rate of interest resulted in higher levels of interest cost. It can be seen that interest cost became a significant component of state expenditure after economic reforms (*Table 10*). Interest payment as percentage of total state expenditure went up from 5.41 per cent in 1980–81 to 16.8 in 2002–03, which is nearly a threefold increase. Similarly, state's interest payment as percentage of non-developmental expenditure touched almost 50 per cent during 2003–04.

Table 9: Nominal Interest Rates on Central and State Government Dated Securities

Year	*Central Government Securities*		*State Government Securities*	
	Range	*Weighted Average*	*Range*	*Weighted Average*
1980–81	5.98 - 7.50	7.03	6.75	6.75
1985–86	9.00 - 11.50	11.08	9.75	9.75
1990–91	10.50 - 11.50	11.41	11.50	11.50
1991–92	10.50 - 12.50	11.78	11.50 - 12.00	11.84
1992–93	12.00 - 12.75	12.46	13.00	13.00
1993–94	12.00 - 13.40	12.63	13.50	13.50
1994–95	11.00 - 12.71	11.90	12.50	12.50
1995–96	13.25 - 14.00	13.75	14.00	14.00
1996–97	13.40 - 13.85	13.69	13.75 - 13.85	13.82
1997–98	10.85 - 13.05	12.01	12.30 - 13.05	12.82
1998–99	11.10 - 12.60	11.86	12.15 - 12.50	12.35
1999–00	10.73 - 12.45	11.77	11.00 - 12.25	11.89
2000–01	9.47 - 11.70	10.95	10.50 - 12.00	10.99
2001–02	6.98 - 11.00	9.44	7.80 - 10.53	9.20
2002–03	6.57 - 8.62	7.34	6.60 - 8.00	7.49
2003–04	4.62 - 6.35	5.71	5.78 - 6.40	6.13
2004–05	4.49 - 8.24	6.11	5.60 - 7.36	6.45
2005–06	6.70 - 7.79	7.34	7.32 - 7.85	7.63
2006–07	7.06 - 8.75	7.89	7.65 - 8.66	8.10
2007–08	7.55 - 8.64	8.12	7.84 - 8.90	8.25
2008–09	7.69 - 8.81	7.69	5.80 - 9.90	7.87
2009–10	6.07 - 8.43	7.23	7.04 - 8.58	8.11
2010–11	5.98 - 8.67	7.92	8.05 - 8.58	8.39
2011–12	7.80 - 10.01	8.52	8.36 - 9.49	8.79
2012–13	7.86 - 8.82	8.36	8.42 - 9.31	8.84
2013–14	7.16 - 9.40	8.45	7.57 - 9.94	9.18
2014–15	7.65 - 9.42	8.51	8.00 - 9.66	8.58
2015–16	7.54 - 8.27	7.89	7.95 - 8.88	8.28

Source: Reserve Bank of India.

Table 10: Interest Payment of the States

Year	*Interest Payment as % of Total Expenditure*	*Interest Payment as % of Non-developmental Expenditure*	*Interest Payment as % of Revenue Expenditure*
1970–71	7.69	26.22	11.74
1971–72	7.39	24.72	11.29
1972–73	6.46	29.3	9.43
1973–74	6.71	29.07	9.74
1974–75	6.26	27.7	8.93
1975–76	6.69	29.73	9.88
1976–77	6.39	29.28	9.53

Year	*Interest Payment as % of Total Expenditure*	*Interest Payment as % of Non-developmental Expenditure*	*Interest Payment as % of Revenue Expenditure*
1977–78	6.2	29.39	9.22
1978–79	6.07	30.46	9.07
1979–80	5.26	27.14	7.8
1980–81	5.41	28.56	8.27
1981–82	5.72	28.82	8.43
1982–83	5.93	28.99	8.42
1983–84	5.85	28.52	8.25
1984–85	6.19	29.57	8.7
1985–86	6.55	30.57	8.97
1986–87	7.92	36.55	10.78
1987–88	8.18	36.77	10.86
1988–89	8.85	37.36	11.36
1989–90	9.36	37.32	11.93
1990–91	9.5	38.3	12.06
1991–92	10.14	40.32	12.7
1992–93	11.07	41.15	13.73
1993–94	11.81	41.74	14.51
1994–95	12.2	39.65	15.28
1995–96	12.51	40.04	15.26
1996–97	12.74	41.38	15.21
1997–98	13.31	42.18	16.17
1998–99	13.56	41.61	16.31
1999–00	14.49	41.16	17.34
2000–01	15	43.64	17.71
2001–02	16.71	45.46	19.88
2002–03	16.83	46.16	20.86
2003–04	15.63	48.27	21.58
2004–05	15.62	46.68	21.46
2005–06	14.96	44.22	19.18
2006–07	14.18	43.98	18.43
2007–08	13.27	42.8	17.19
2008–09	11.67	40.38	15.1
2009–10	10.73	35.81	13.57
2010–11	10.80	34.35	13.54
2011–12	10.79	34.11	12.7
2012–13	9.79	32.94	11.7
2013–14	10.44	33.48	12.2
2014–15	8.87	31.93	10.6

Source: Calculations based on RBI data.

Higher rate of interest led to high interest cost which, in turn, resulted in low level of public expenditure that is crucial to further economic growth. Therefore, while on the one hand, high interest cost forced the state governments to cut down their developmental expenditure, on the other hand, absence of diversified sources of finance forced the states to squeeze their fiscal space. The net result was so obvious—the state's capital expenditure as percentage of NSDP (Net State Domestic Product) went down from about 5.74 per cent in 1990–91 to 3.56 per cent in 2014–15 (*Table 11*).

Table 11: Share of Capital Expenditure in NSDP: All States

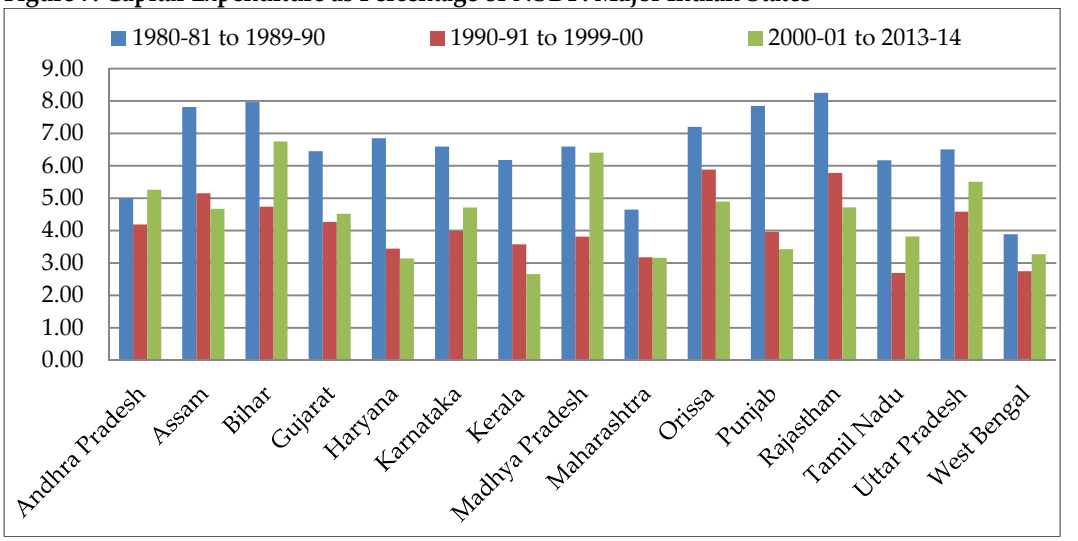
Year	*All States CE % of NSDP*	*Year*	*All States CE % of NSDP*
1980–81	5.74	1998–99	2.65
1981–82	5.05	1999–00	2.72
1982–83	4.75	2000–01	2.60
1983–84	4.65	2001–02	2.71
1984–85	4.89	2002–03	3.39
1985–86	4.60	2003–04	5.40
1986–87	4.69	2004–05	5.07
1987–88	4.45	2005–06	3.65
1988–89	3.75	2006–07	3.83
1989–90	3.63	2007–08	3.74
1990–91	3.63	2008–09	3.78
1991–92	3.54	2009–10	3.54
1992–93	3.29	2010–11	3.12
1993–94	3.05	2011–12	3.30
1994–95	3.36	2012–13	3.22
1995–96	2.82	2013–14	3.12
1996–97	2.48	2014–15	3.56
1997–98	2.74		

Source: Calculations based on RBI data.

State wise analysis of public investment which is measured in terms of capital expenditure as ratio of NSDP shows that almost all major Indian states have witnessed signifcant decline during the decade following liberalisation (1991 to 2000) in comparison to a decade prior to liberalisation (*Figure 7*). Between 2000 and 2014, there has been an improvement in the level of public investment in major Indian states, however, it still continues to be much lower in comparison to the decade of the 1980s. Andhara Pradesh happens to be the only major state to record a high level of public investment between 2000 and 2014. Few other states like Bihar and Madhya Pradesh have been to able to

accelerate public investment upto a level which is almost similar to that of the pre-liberalisation period (1980s). Out of 15major Indian states, only six states were able to accelerate public investment during the 2000s (2000 to 2014) incompariosn to the period of the 1990s (1991 to 2000). The remaining states witnessed further decline in public investment during the 2000s (2000 to 2014).

Figure 7: Capital Expenditure as Percentage of NSDP: Major Indian States



Source: Calculated from Reserve Bank of India: State Finance, various issues.

6.2 Public Investment and Growth Dynamics of Indian States: Empirical Analysis

In *Table 12*, the growth outcome of the states has been compared with the changing pattern of public investment (capital expenditure).It can be seen that several states including Andhra Pradesh, Assam, Bihar, Haryana, Odisha, Punjab, Rajasthan and Uttar Pradesh recorded low growth rates during the 1990s in comparison to the 1980s. These states also registered a decline in public investment during the 1990s. On the other side, we can see that during the 2000s, almost all states registered high growth rates. Over the same time period, most of the states also recorded a relatively high level of public investment in comparison to the 1990s. Therefore, from the above analysis, we can argue that there is a correspondence between the increase or decline in public investment as a driver of growth and income growth, depending on the growth dynamics of the concerned state. The above discussed pattern is not true for all states, as income growth of a region depends on several other aspects including public investment. And, to a large extent, the impact of public investment on growth would depend more on the growth dynamics of the states, given the extent to which public investment plays a significant role as source of growth.

Table 12: NSDP Growth and Capital Expenditure to NSDP Ratio of Major Indian States: 1980–81 to 2011–12 (annual average)

States	*NSDP Growth (%)*			*CE -NSDP Ratio (%)*		
	1980–81to 1989–90	*1990–91to 1999–00*	*2000–01to 2011–12*	*1980–81to 1989–90*	*1990–91to 1999–00*	*2000–01to 2011–12*
Andhra Pradesh	6.81	5.20	7.84	5.00	4.19	5.52
Assam	4.13	2.50	5.21	7.81	5.15	4.98
Bihar	4.57	2.77	7.10	7.96	4.74	7.04
Gujarat	6.49	6.80	9.57	6.45	4.27	4.45
Haryana	6.43	5.15	8.83	6.85	3.44	3.25
Karnataka	5.57	6.75	5.89	6.60	3.99	4.78
Kerala	2.87	5.99	7.52	6.18	3.57	2.68
U MP	3.85	5.57	6.32	6.59	3.81	6.49
Maharashtra	6.30	6.63	8.07	4.65	3.18	3.29
Odisha	5.20	2.68	6.98	7.20	5.88	5.00
Punjab	5.79	4.28	5.56	7.85	3.96	3.73
Rajasthan	7.53	6.53	6.56	8.25	5.78	4.85
Tamil Nadu	5.42	6.32	7.53	6.17	2.69	3.91
UP	4.92	2.89	5.99	6.50	4.58	5.28
West Bengal	4.13	6.67	6.20	3.89	2.75	3.40

Source: Calculations based on RBI data.

6.3 Determinants of Regional Economic Growth in India

In this section, the above-discussed relationship has been empirically examined. Studies on the determinants of regional growth in India suggest that several variables like physical infrastructure, social infrastructure, banking and financial infrastructure, urbanisation, public investment and credit do influence the output growth of a state or region (Ahaluwalia, 2000; Krishna, 2004). Physical infrastructure includes road connectivity; availability of power, and telecommunication while social infrastructure includes variables like literacy and infant mortality rate.

In this section, the determinants of NSDP growth of major Indian states have been presented empirically. The overall major determinants of state growth in the post reform period have been estimated using panel estimation (Fixed Effect Model). The NSDP growth rate of major states has been regressed on the one year lag of public investment, along with other determinants of growth like credit flow, credit to deposit ratio, literacy, life expectancy and the index of physical infrastructure. The infrastructure index includes three variables—road connectivity, power availability and telecommunication density. The Principal Component Analysis has been used to derive the weights for the respective variables.

By estimating the following regression equation (fixed effect panel estimation method), the determinants of regional NSDP growth have been estimated for major Indian states.

$$NSDPGR_{it} = \beta_{1i} + \beta_2 CR.L1_{2it} + \beta_3 CE.L1_{3it} + \beta_4 CDR_{4it} + \beta_5 LE_{5it} + \beta_6 LY_{6it} + \beta_7 PINF_{7it} + U_{it}$$

where, NSDPGR = NSDP growth rate, CR.L1 = Credit to NSDP Ratio with Lag 1, CE.L1 = Capital Expenditure to NSDP Ratio with Lag 1, CDR= Credit – Deposit Ratio, LE = Life Expectancy at Birth, LY = Literacy Rate, and PINF = Physical Infrastructure Index.

As mentioned, panel estimation has been conducted with the fixed effects regression model. It can be seen from the results that except credit, the rest of the variables including capital expenditure, credit to deposit rate, life expectancy, literacy and index of physical infrastructure are found to be positively associated with NSDP growth (*Table 13*). However, none of the associations are found to be statistically significant. As discussed, since the growth dynamics of different sates vary because of the differential economic structure, therefore the determinants of NSDP growth have been estimated for each major Indian state in order to study the role of public investment in NSDP growth.

Table 13: Panel Estimation of Growth Determinants of Indian States: 1990–91 to 2011–12

Dependent Variable: GR R Square: Overall 0. 3967

Regressor	*Coefficients*	*Standard Error*	*T-Ratio*	*P. value*
CR.L1	-0.01117	0.02607	-0.43	0.669
CE.L1	0.18311	0.220702	0.83	0.407
CDR	0.00624	0.01912	0.33	0.743
LE	0.04769	0.09549	0.52	0.603
LY	0.03221	0.04125	0.78	0.436
PINF	0.0002934	0.001633	0.18	0.857
C	-0.15903	5.23823	-0.03	0.976

Note: CR.L1 = Credit to NSDP Ratio with Lag 1, CE.L1= Capital Expenditure to NSDP Ratio with Lag 1, CDR= Credit – Deposit Ratio, LE = Life Expectancy at Birth, LY = Literacy Rate, PINF = Physical Infrastructure Index.

Source: Author's calculation.

By estimating the following OLS regression equation, the determinants of NSDP growth of the major individual states have been estimated.

$$NSDPGR_i = \beta_1 + \beta_2 CR.L1_i + \beta_3 CE.L1_i + \beta_4 CDR_i + \beta_5 LE_i + \beta_6 LY_i + \beta_7 PINF_i + U_i$$

where, NSDPGR = NSDP growth rate, CR.L1 = Credit to NSDP Ratio with Lag 1, CE.L1 = Capital Expenditure to NSDP Ratio with Lag 1, CDR= Credit - Deposit Ratio, LE = Life Expectancy at Birth, LY = Literacy Rate, and PINF = Physical Infrastructure Index.

From the OLS estimation (*Table 14*), it is found that depending on the growth dynamics and the economic structure of the state, the explanatory variables are associated with the NSDP growth. For majority of the states, bank credit and public investment (capital expenditure) positively influence NSDP growth and in a few states the relationship is negative. The positive association between the NSDP growth and public investment (capital expenditure) has been found in Andhra Pradesh, Assam, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu and West Bengal. Therefore, as discussed earlier, given that public investment is found to have a positive influence on NSDP growth in majority of the states, a decline in public investment, especially after the introduction of reforms, is likely to impact the output growth of the state depending on the growth dynamics and economic structure of the concerned state.

Table 14: OLS Estimation of Growth Determinants of Major Indian States: 1990–91 to 2011–12

Dependent Variable = GR (NSDP)

State	*CR.L1*	*CE.L1*	*CDR*	*LE*	*LY*	*PINF*	*C*	*R Square*
Andhra Pradesh	0.7866	2.2605	-0.1359	-0.4463	0.3343	-0.0406	7.8166	0.485
	(1.78)***	(2.31)**	(-0.72)	(-0.39)	(1.02)	(-1.68)	(0.12)	
Assam	0.09669	0.10434	0.0604	-0.2732	0.20592	0.03177	-0.571	0.7361
	(0.77)	(0.3)	(1.33)	(-0.59)	(0.9)	(1.0)	(-0.01)	
Bihar	-0.1789	-0.4932	-0.0793	-2.4989	1.4919	-0.0178	104.3	0.446
	(-0.47)	(-0.42)	(-0.83)	(-1.38)	(1.81)***	(-0.64)	(1.21)	
Gujarat	0.5621	-0.6977	-0.4289	2.2447	-2.5733	0.0405	31.3652	0.223
	(1.0)	(-0.37)	(-1.28)	(1.02)	(-1.21)	(0.83)	(0.22)	
Haryana	-0.0245	-0.1669	-0.0618	0.6012	0.3115	-0.00208	-47.843	0.4916
	(-0.06)	(-0.22)	(-0.29)	(0.51)	(0.65)	(-0.13)	(-0.68)	
Karnataka	-0.22312	1.2443	0.31905	0.34964	0.44052	-0.01861	-59.8299	0.3422
	(-1.14)	(1.32)	(2.33)**	(0.60)	(0.64)	(-0.46)	(-0.91)	
Kerala	0.2065	1.0263	-0.1737	0.0709	1.3220	0.0063	-199.912	0.5306
	(0.92)	(1.52)	(-1.46)	(0.93)	(1.47)	(0.54)	(-1.52)	
Madhya Pradesh	1.00	0.4292	-0.18645	-0.5968	-0.5501	0.0388	48.595	0.3402
	(1.17)	(0.53)	(-0.46)	(-0.87)	(-1.12)	(1.12)	(1.07)	
Maharashtra	-0.29434	0.40286	-0.1971	0.27206	-0.3401	0.0547	19.262	0.39
	(-1.17)	(0.41)	(-0.96)	(0.39)	(-0.49)	(1.89)***	(0.46)	
Odisha	0.8912	0.97906	-0.0203	-1.2047	0.12489	0.0515	47.352	0.4875
	(2.10)***	(1.16)	(-0.16)	(-1.41)	(0.31)	(0.38)	(0.92)	
Punjab	-0.03006	0.17705	-0.447	-0.3007	-0.2908	0.0142	37.7676	0.3634
	(-0.16)	(0.41)	(-0.47)	(-0.46)	(-0.63)	(1.29)	(1.07)	
Rajasthan	2.1788	1.3399	-0.47709	-0.35972	0.4952	-0.0681	0.8851	0.2747
	(1.87)***	(0.78)	(-0.96)	(-0.12)	(0.69)	(-0.87)	(0.01)	

State	*CR.L1*	*CE.L1*	*CDR*	*LE*	*LY*	*PINF*	*C*	*R Square*
Tamil Nadu	0.08004	1.8759	-0.0765	-0.5465	0.2553	-0.00033	22.5109	0.3314
	(0.24)	(1.86)***	(-0.40)	(-0.77)	(0.28)	(-0.01)	(0.41)	
Uttar Pradesh	0.5639	-0.1375	-0.0065	-0.2148	0.2262	-0.0066	-2.957	0.4958
	(0.85)	(-0.27)	(-0.04)	(-0.36)	(0.58)	(-0.22)	(-0.13)	
West Bengal	0.11055	0.4901	0.0451	-0.3668	0.2734	-0.0149	7.942	0.1597
	(0.76)	(1.19)	(0.42)	(-1.06)	(0.90)	(-0.95)	(0.59)	

Note: *, **, and *** implies significance level at 1%, 5%, and 10% respectively; T value is presented in parenthesis; GR= NSDP Growth, CR.L1 = Credit to NSDP Ratio with Lag 1, CE.L1= Capital Expenditure to NSDP Ratio with Lag 1, CDR= Credit – Deposit Ratio, LE = Life Expectancy at Birth, LY = Literacy Rate, PINF = Physical Infrastructure Index.

Source: Author's calculation.

7. Concluding Remarks

An attempt has been made in this paper to study the empirical foundation of the current fiscal policy discourse which is contractionary in nature as well as its implication for regional economic growth in India. We found that the trend of fiscal deficit and growth do not exhibit any definite empirical relationship. We can see high growth with high fiscal deficit and also high growth with low fiscal deficit. Figures also exhibit low growth rate with low fiscal deficit and low growth rate with high fiscal deficit. A similar story also emerges from the analysis of trends in fiscal deficit and interest rate in India. The econometric analysis of the estimation of the interest rate function also fails to conclude anything concrete as far as the relationship between fiscal deficit and interest rate goes. During the study period, fiscal deficit is found to be positively associated with interest rate in India; however, it is not statistically significant. The short-run analysis presented in the form of ECM suggests an inverse relationship between fiscal deficit and economic growth. Quite contrary to the assumption, the results of post reform analysis show a negative relationship between the rate of interest and fiscal deficit. It suggests that higher levels of fiscal deficit do not lead to higher levels of interest rate. Therefore, the empirical foundation of the argument behind the policy of fiscal consolidation is found to be not true for India. On the other side, the policy of fiscal consolidation that assumes crowding out of private investment through high interest rate due to increasing fiscal deficit was found to have wider implication in terms of its impact on public investment and regional economic growth. With the introduction of financial liberalisation and as financial market gained prominence and reduction of deficit became the fiscal policy framework, several significant changes took place in the financing pattern of the deficits of state governments. Market borrowing has become the principal source of finance for government deficits and loans from centre are no more an option for the states. State governments had to compete with the central government in the market for borrowing, resulting in higher interest rate payments. The increase in interest cost has resulted in

declining public investment, as state governments significantly reduced their capital expenditure in order to cut down borrowings from the market. Rising interest cost burden has resulted in the contraction of public investment. Given the importance of public investment as a key driver of growth in several states, the decline in public investment has adversely impacted the growth outcome in many states, depending on their growth dynamics.

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