

Dynamics of the relation between fiscal deficit, tax revenue and economic growth in Jharkhand

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Abstract: *Economic growth seems to be a prerequisite for any other progress in the economy. In the light of this fact it becomes imperative to isolate the factors which affect growth. In this direction the present paper attempts to trace the linkage between the fiscal position and the Domestic Product of a state with reference to the state of Jharkhand ever since its inception. The finances of the government are meant for both capital formation as well as current spending. It is the nature of expenditure determines the productivity of the spending which has been under taken in this study.*

Keywords: Economic Growth, Domestic Product, Capital Formation.

Introduction

The popular discourse around the scope of macroeconomic growth revolves hugely around the National Income of the economy and its growth embracing indeed some of the other facets like the fiscal position, the status of international reserves, the rate of inflation, employment generation, to mention a few. The present paper deals with the importance of the issue of fiscal position of the economy and its relation with economic growth in Jharkhand's perspective. The fiscal position of any economy speaks volumes about its economic health. Again the composition of the fiscal deficit helps determine the direction of the economy. Precisely a deficit to finance capital expenditure may add to output and employment more than the one meant to finance revenue expenditure. A high fiscal deficit makes the economy vulnerable. It can be remembered that huge fiscal deficit during the late eighties and early nineties was one of the reasons forcing us to borrow from the International Monetary Fund (IMF). The importance of fiscal deficit can be gauged from the fact that the various governments from time to time have come up with different measures and deadlines for keeping deficits under prescribed limits.

The present paper deals with the issue of fiscal deficit and economic growth in the context of Jharkhand after it was created as a separate state in 2000. The paper is divided into four sections, Section I presents the theoretical background and conceptual framework. Section II deals with literature review associated with the issue. Section III presents the data and methodology used in the study. The results and analysis have been presented in section IV.

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Section I

Theoretical Background and Conceptual Framework

Fiscal deficit represents excess government expenditure over income. There have been different views on fiscal deficit given by different schools of economics. The classical view on fiscal deficit has been that flexible prices and wages shall maintain the aggregate output at full employment level and there is no need for fiscal policy as such. Government expenditure financed through borrowing inflates the rate of interest and hence crowds out private investment. But as per Keynesian economics government expenditure is the order and not an exception in times of depression. Then comes the synthesis in the form of IS-LM framework where fiscal and monetary policies together uplift the economy toward full employment without inflation.

Section II

Review of Literature

The following section presents review of literature involving sections separately on the factors affecting economic growth, the relation between fiscal deficit, inflation and interest rate and lastly the relation between economic growth and fiscal deficit.

Factors Affecting Economic Growth

There are many factors which affect economic growth. It has been found that capital accumulation, human capital, research, development & innovation, management & organisation and infrastructure are some of the determinants of growth. Also there remains immense scope for the contribution of the government sector towards economic growth (Stern, 1991).

In another study involving the different states of USA it has been found that human capital, investment, terms of trade affect economic growth positively apart from other variables like government spending and political environment (Barro and Martin, 1995).

Similarly based on a panel study conclusions have been drawn that while human capital, rule of law, terms of trade and investment positively affect economic growth whereas inflation & government consumption excluding defence and education spending affect growth negatively (Barro, 1996).

The conclusions have been similar for the Chinese economy where it has been found that variables like higher education enrolment ratio, industrialisation, and investment accelerate while variables like birth rate, inflation and state-owned enterprises retard growth rate (Chen and Yi, 2000).

After performing various tests it has been concluded that only four variables have a statistically significant impact upon the GDP growth rate: gross government debt as share in GDP, nominal short term interest rate, openness of the economy and total government revenue as percentage of GDP (Dinca, et al, 2015).

Fiscal Deficit, Rate of Interest and Inflation

There exists a positive relation between budget deficit and long term interest rate in the US (Kiani, 2007). This somewhere is suggestive of the fact that government spending shall not crowd out private investment and hence not affect growth negatively.

Contrary to this there has been seen positive correlation between fiscal deficit and interest rate in USA. And not only this the relation is bidirectional (Cebula, 2008). However mere

correlation is not sufficient to establish causation. A similar conclusion has been drawn in another study where there is a positive effect of budget deficit on interest rate in the United States (Feldstein, 1986).

However, it has been found in the case of Canada that government spending did not have any impact on long-term interest rate (Siklos, 1988).

Similarly for the period of recent worldwide recession it has been found that an increase in government deficit did not cause an increase in either interest rate or inflation in the US, hence proving the line of argument forwarded by Keynes (Pollin, 2012).

In another study in the US for the period 1959-1979 it has been found that there is not any significant correlation between deficit spending and inflation (Giffin et al, 1981).

In one of the studies based in the United States involving the period 1930 to 2006, it has been found that for this period there has been negative relation between deficit spending and economic growth with unemployment, interest rate and inflation as control variables. However the line of argument given is that this negative relation has only been for the concluding years and not for the entire period attributing to the fact that it has effect on raising long term interest rate (Hassan et al, 2014).

Empirical Studies Tracing the Impact of Fiscal Deficit on Economic Growth

In a study using the Vector Error Correction model it has been concluded that there is a significant positive impact of an increase in government debt on real GDP, thus providing a counterargument against practicing austerity (Taylor, et al.).

A study examining the causal relation between budget deficit and economic growth in case of seven West African countries shows that in three countries there is no causal relation between economic growth and government deficit while in the other four there is the deficit retards growth (Keho, 2010). In another study involving 70 developing countries for the two different time periods 1970-1979 and 1980-1989 show that government deficit has little effect on the economic growth in these nations (Nelson and Singh, 1994).

Similarly in a study involving Argentina it has been discovered that growth has actually been retarded by deficit through impact on price (Avila, 2011).

However in case of USA, the interactions between primary fiscal deficit, economic growth and debt for the period 1961-20 reflect positive relation primary deficit and growth (Taylor et al., 2012).

Section III

Data and Methodology

The present section throws light on the sources and type of data used in the study and gives an overview of the methodology adopted in the paper. This study uses annual data on variables like Gross State Domestic Product (GSDP) of Jharkhand, which measures economic growth in the state, Gross Fiscal Deficit (GFD) and Tax Revenue (TAX REV) of the state which reflects the fiscal position of the state. The Time Series data pertaining to GSDP, GFD and Tax Revenue have been taken from the Reserve Bank of India statistics.

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Section IV

Result and Analysis

The objective of this section is to explore the dynamics of the relation between economic growth and the fiscal position of the state with reference to Jharkhand since it got carved out of Bihar in 2000. All the variables have been transformed into their natural logarithms to avoid the problem of heteroscedasticity. Thereafter the stationarity of the variables has been tested using the Augmented Dickey Fuller Unit Root Test. As second step a test of cointegration has been undertaken. Further a Vector Auto-Regressive analysis (VAR) has been performed.

The Stationarity of the Variables

The Augmented Dickey Fuller Test has been applied to test the stationarity of the series of GSDP, GFD and TAX REV. The model assumes that the natural logarithm of all the variables is a random walk with drift and linear trend. The null hypothesis is that there is a unit root. The results of the Augmented Dickey Fuller Test have been presented in the table 1 below.

The results of the test show that the series of GSDP, GFD and Tax Revenue are all integrated of order two meaning they are stationary in the second difference form and at 10 percent level of significance.

Table 1: Test of Stationarity

Variable	Test Equation Type	Order of Integration	ADF Test Statistics
LGSDP	Intercept and trend	2	-7.189960
LGFD	Intercept and trend	2	-3.679050
LTAX REV	Intercept and trend	2	-4.132837

Source: Author's own calculation from RBI data.

Johansen's Cointegration Test

In the next step Johansen's Cointegration Test has been performed to assess if there exists long run relation between GSDP, GFD and TAX REV. The results of the test as presented below in table 2 show that there does not exist any long run relation between the variables in question. The probability value (p-value) for zero number of hypothesized cointegrating equations is greater than 5 percent. This means that the null hypothesis cannot be rejected. This means that there exists no cointegrating equation among these variables.

Table 2: Johansen's Cointegration Test

Hypothesized No. of Cointegrating Equations	Eigen Value	Trace Statistics	p-value
None	0.722554	21.76979	0.3115

Source: Author's own calculation from RBI data.

Vector Auto-regression Analysis (VAR)

The unrestricted VAR model taking the variables GSDP, GFD and TAX REV has been estimated and the results are reported in table 3 below. Three equations constitute the VAR model. The equations in the model are as follows:

$$\text{GSDP} = \text{C}(1)*\text{GSDP}(-1) + \text{C}(2)*\text{GSDP}(-2) + \text{C}(3)*\text{GFD}(-1) + \text{C}(4)*\text{GFD}(-2) + \text{C}(5)*\text{TAXREV}(-1) + \text{C}(6)*\text{TAXREV}(-2) + \text{C}(7) \dots\dots\dots(i)$$

$$\text{GFD} = \text{C}(8)*\text{GSDP}(-1) + \text{C}(9)*\text{GSDP}(-2) + \text{C}(10)*\text{GFD}(-1) + \text{C}(11)*\text{GFD}(-2) + \text{C}(12)*\text{TAXREV}(-1) + \text{C}(13)*\text{TAXREV}(-2) + \text{C}(14) \dots\dots\dots(\text{ii})$$

$$\text{TAXREV} = \text{C}(15)*\text{GSDP}(-1) + \text{C}(16)*\text{GSDP}(-2) + \text{C}(17)*\text{GFD}(-1) + \text{C}(18)*\text{GFD}(-2) + \text{C}(19)*\text{TAXREV}(-1) + \text{C}(20)*\text{TAXREV}(-2) + \text{C}(21) \dots\dots\dots(\text{iii})$$

Here the C terms represent the different coefficients and the numbers in () represent the lag length.

The results of the test reveal that p-value is less than 5 percent only in the case of equation (i) for the coefficients of GSDP with lag one and GFD with lag one. This means that the variables GSDP with lag one and GFD with lag one are significant in explaining variations in GSDP. The coefficient associated with GSDP with lag one is positive meaning that there is positive lag effect in case of Gross State Domestic Product. The coefficient associated with GFD with lag one is negative which means that there is negative association between fiscal deficit and Gross State Domestic Product.

The p-value associated with the remaining coefficients in the equations (i), (ii) and (iii) is more than 5 percent. This means that the other variables are not significant in explaining the changes in the corresponding dependent variables.

Table 3: Results of VAR Analysis

Variables	GSDP	GFD	TAX REV
GSDP(-1)			
coefficient	1.225733	2.728708	1.204140
t- value	2.62665	1.022166	2.063060
p-value	0.0191	0.3229	0.0569
GSDP(-2)			
coefficient	0.427031	-1.439244	0.607984
t- value	0.79830	-0.470328	0.908718
p-value	0.4372	0.6449	0.3779
GFD(-1)			
coefficient	-0.326165	-0.279012	-0.309404
t- value	-2.972912	-0.444556	-2.254752
p-value	0.0095	0.6630	0.0395
GFD(-2)			
coefficient	0.036930	0.644509	0.023329
t- value	0.311904	0.951541	0.157532
p-value	0.7594	0.3564	0.8769
TAXREV(-1)			
coefficient	-0.229696	-2.403331	0.012384
t- value	-0.673357	-1.231585	0.029025
p-value	0.5110	0.2371	0.9772
TAXREV(-2)			
coefficient	-0.471201	1.245897	-0.784588
t- value	-1.148408	0.530798	0.513194
p-value	0.2688	0.6033	0.1471

Source: Author’s own calculation from RBI data

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Economic Interpretation of the Findings

The conclusion drawn from the non-existence of co integrating equations among the variables in question suggests that there is no long run relation among these variables. Further the causality in the direction from GFD and TAX REV towards GSDP is not significant. This means that in case of Jharkhand since its inception the fiscal health of the state has not much affected the growth in the state. However the VAR analysis suggests that there is lag effect of previous income as well as effect of previous GFD on state's domestic product. Deficit has negative relation with growth as suggested by the negative value of the coefficient associated with GFD with lag one. This means that deficit is having a negative impact on growth. This is possible when the deficit is not incurred to finance capital expenditure in the state. A negative impact of deficit on growth suggests that the expenditure is meant for current spending and not capital formation. This kind of result and conclusion is also attributable to the fact that there are other important factors affecting growth in the state.

Conclusion

The present paper attempts to trace the relation between economic growth and fiscal position of the state. As is clear from the results firstly, there is lag effect on growth of the previous year's domestic product and secondly, there is negative effect of fiscal deficit on growth. This means that the deficit has been incurred to finance current spending and not capital formation in the state. This means that the finances need to be streamlined and moved in the direction of better returns.

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