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THE CAUSAL LINK BETWEEN REVENUE AND EXPENDITURE: AN EMPIRICAL ANALYSIS OF STATES

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ABSTRACT

Using the annual data from 1980-2012, this paper attempts to test the causal relationship between total expenditure and total revenue of five states in India within the empirical framework of causality. During the period 1980 – 2012, this study finds support for a long run relationship between expenditure and revenue following spend-tax hypothesis in Maharashtra, Gujarat and Uttar Pradesh but Bihar and Orissa have followed. However, this study finds evidences of a unidirectional causality from expenditure to revenue thereby invalidating the fiscal synchronisation hypothesis, tax-spend hypothesis and institutional hypothesis in state government during the study period. This hypothesis suggests that the unsustainable fiscal imbalances can be mitigated by policies that adjusted government expenditure

KEY WORDS: Tax, Expenditure, Granger Causality Test, Great Depression, Natural Disasters

INTRODUCTION

In developing country, state is playing an important role to enhance economic growth and promote human development through policies. Classical economist assumed that there is minimum interference of state in economic activities. They believed in free market economy. But Keynes focused the role of state after the great depression. State can play a role as an instrument to remove the fluctuation and distortions in the economy through government finance. The state's activities are increasing day by day. So it needs to enhance their revenue receipt. Keynes supported deficit budgeting for fulfilment of state's development finance. According to 'wager' law, an increase in state activity is accompanied by an increase in government expenditure as a proportion of National Income. Wiseman peacock explained that critical situation like war, depression require a sizeable increase in their relative share of public expenditure. This shows that the government has to perform a number of functions more efficiently. On the other hand, state has limited source of revenue.

Government expenditure Government expenditures have exceeded their receipts causing budget imbalances. Imposition of higher taxes to meet the rising fiscal deficits has triggered off a

heated debate between its supporters and critics. Broadly, the supporters believe that higher taxes would help to balance the budget and reduce the ill effects of deficits. While the critics believe that increasing taxes would only lead to increased Government spending. These arguments culminate into four possible hypotheses on the intertemporal link between Government revenue and expenditures.

The causal nexus between revenues and government expenditure is a classic problem of Public Economics. There are four hypotheses that can potentially explain observed spending-revenue behaviour. The hypotheses are briefly discussed as follows: the tax-to spend hypothesis suggests that tax may lead to government spending. This view is supported by supply side economist Friedman, (1978) who argued that if change in government revenue lead to change in government expenditure and no deficit. If revenues have a positive impact on expenditure, then decreasing revenues will lead to lower deficit. But Buchanan and Wagner (1977, 1978) presented alternative version of tax spend hypothesis. Tax influenced expenditure but revenue have negative impact on expenditure. Further claims made by supply side economist (Joulfaian and Mookerjee(1990) and Bohm(1991), that

revenue causes expenditure strengthens the tax spend hypothesis.

Second, spend tax hypothesis suggested that spend may lead to taxes which was explored by peacock and Wiseman (1979). According to them once a relatively high level of taxation and expenditure is set during extra ordinary situation like wars; natural disasters and so on justify increases in expenditure and taxes to pay them. Therefore change in expenditure leads to change in revenue. Barro (1979,1986) with his inter temporal tax smoothing model, argued expenditure is considered as an dependent variable to which tax adjust.

Fiscal synchronisation hypothesis suggested that government may determine expenditure and revenue concurrently. Meltzer and Richard (1981) examined the relationship between US federal budget outlays and tax receipts found support for bidirectional causality between receipt and expenditures.

The fourth hypothesis, mentioned by Baghestani and McNown (1994) and highlighted by Darrat (1998), relates to the institutional separation of the expenditure and revenue decisions of the government. There is no inter temporal causality between expenditure and revenue. Here, expenditure would be defined on the basis of requirements expressed by the citizenry and revenue would depend on the maximum tax burden tolerated by the population. As a result, the achievement of fiscal equilibrium would merely be a matter of coincidence.

There has been a debate in literature concerning evidence on the above four hypothesis causal relationship may be either one way or two way. One way causality implies that one variable determines to other variable. While in two way causality are determined variable simultaneously.

There are so many works on the causal relationship between revenue and expenditure in the context of state government in India. Nithin (2015) investigated the revenue-expenditure relationship in context of central and general category states in India during the period 1973-2011. In majority of the States, tax and spend hypothesis has been upheld in case of own revenue and expenditure indicating that the size of the government at the state level is determined by the resource supply and not by expenditure demand. Mohanty and mannem (2014) examined the relationship between revenue and expenditure for Odisha. They found a unidirectional causality from revenue to expenditure. Their study followed Barro's hypothesis. Raju (2008) has desegregated the revenue receipts and expenditure patterns. Her study followed the proposition of spend tax hypothesis. Vadlamannati and Veni (2007) studied about the state of Andhra Pradesh and established a causal relationship from revenue to expenditure.

Dhanasekaran (2001) analysed that there has unidirectional causality between revenue and expenditure. He compared granger causality test and Geweke's test. The results showed the absence of co-integration between Government tax revenue and expenditure variables implying no evidence of a stable long run relationship between them Bhat (1993) analyzed the states' total expenditure and tax revenue using data from 1969 to1989, and found evidence of bi-directional causality using Granger causality test as well as the Sims test.

In front of state government, the causal relationship between government expenditures and tax revenues is one of the important problems. Fiscal policy of state is playing a huge role to achieve various development goals such as growth and social justice. These goals have been sought to be attained by using different tax and expenditure policies and activities of state government. The relationship between revenue and expenditure depends on how the budget deficit is financed. Although there is a vast literature on the causal relationship between government expenditure and tax revenue but the widely differing conclusions from these literatures has resulted in a subject of debate between this relationships.

A review of the fiscal situation of the states and examines strengthen of the state finance. The constitution assigns important responsibilities to states in many sectors. The composition of receipt and expenditure of the govt sector in India reveals that while the state govt collect about one third of the total government receipt. They incurred more than half of the total expenditure on economic expenditure. The aggregate picture of all the states has shown a sharp deterioration in fiscal health since 1990s. For all the states, the year 1987-88 saw the emergence of a deficit on revenue account. The states' revenue deficit as percent of GDP has raised in1997-98 with 3 percent due to the impact of fifth pay commission recommendation. The twelfth finance commission was draw up a fiscal restructuring plan for fiscal consolidation. According to its recommendation, each of the states was required to phase out its revenue deficit and contain the fiscal deficit at 3% of GSDP.

However, the state has shown a steady improvement in their fiscal health. Until 2010-11, the aggregate revenue deficits of the states as a ratio of GSDP declined from 2.3percent in 2003-04 to a surplus of about 0.2percent in 2007-08. This 2.8 percentage point improvement in the revenue deficit helped to reduce the fiscal deficit by 2.1 percentage points and increase the capital outlay by about 0.9 percentage points. Thus, the states in the aggregate were able to generate revenue surplus of about half a per cent and reduced their fiscal deficit to a little over 2% of GDP which is 1 percentage point more than that was recommended in the fiscal restructuring plan of the TFC. In addition, they could increase the capital outlay by about 1

percentage point of GDP. Surely, fiscal consolidation in the states until 2007-08 has helped them to cope better with the economic slowdown.

The rest of the paper is organised as follows: first section presented that the scenario of introduction. Second section discussed with the methodology of Unit root test, Granger causality test, Co integration test and Error Correction Method. Third section show the empirical result of the test of Granger causality. Fourth section contains summary and concluding remarks.

DATA SOURCE

The study is basically based on secondary data sources. The scope of the study limited to tax revenue across the states during from 1980-2012. The data are collected from Handbook of Statistics of Indian Economy, State Finance of RBI, State Budget Documents, Indian Public Finance Statistic, State Finance Commission Reports and other sources. In this analysis, there is some econometrics and the statistics tools are needed. The main econometrics tools those we apply in this analysis is that Unit Root Test, Granger causality test, Co integration test and Error Correction Mechanism techniques.

METHODOLOGY

A number of empirical studies have used in time series data to analysis the causal link between total revenue and total expenditure of state government and also in the case of central government. In the process to analysis the India's growth structure time series data are required but it was well known that the series are non-stationary (poses unit root) in level. Broadly, a time series are Non-stationary when the mean, variance, and covariance are increases with time.

Since econometrics modeling with the desirable statistical properties of the estimator are given the misleading information, so it has necessary to test the

Series are stationary or not before using the econometrics excises. A simple first Order autoregressive process can be expressed by the following equation

$$Y_t = \mu + \alpha Y_{t-1} + \epsilon_t \quad \dots\dots(1)$$

Where Y_t is the stochastic process, μ , and α are parameter and ϵ_t is a random disturbance term with white noise properties. The parameter of above equation gives the nature of time series. If $\mu \neq 0$ and $\alpha < 1$, then Y_t follow a deterministic trend. The presence of autoregressive component with time trend is called the Trend Stationary Process (TSP). If the time series is said to follow a simple random walk then it is called unit root process. Any non-stationary process, which becomes stationary after taking difference, it is called the difference stationary process. There are three different models in time series. The first model is without drift,

second model is with drift and third model is with drift plus time trend. The equation of all three models is -:

Without drift and without time trend (Model - 1)

$$Y_t = \alpha Y_{t-1} + \epsilon_t$$

With drift and without time trend (Model - 2)

$$Y_t = \mu + \alpha Y_{t-1} + \epsilon_t$$

With drift and with time trend (Model - 3)

$$Y_t = \mu + \alpha Y_{t-1} + \gamma t + \epsilon_t$$

In the econometrics literature there are several test for the non-stationary time series. The Dickey-Fuller (DF), Augmented Dickey- Fuller (ADF) and Philips and Perron unit root test. In the above test, in this dissertation we are use the DF and ADF test.

The Dickey-Fuller and Augmented Dickey-Fuller Tests:-

Dickey-Fuller test examines whether the value of parameter $\alpha=1$ in the first equation than the model have unit root. In other words, the first order autoregressive has unit root. Specifically, assuming their absence of trend term in equation (1), and equation (1) can be written as:

$$\Delta Y_t = \mu_0 + \delta Y_{t-1} + \epsilon_t \quad (2)$$

Where: $\Delta Y_t = Y_t - Y_{t-1}$ and $\delta = \alpha - 1$

The null hypothesis is that there is unit root, i.e.

$$H_0: \delta = \alpha - 1 = 0$$

More generally, if the time series follows a autoregressive process in order p or even moving average process an extended Dickey-fuller test called augmented Dickey-fuller (ADF) test. In the main problem of Dickey and Fuller test is that the error term are serially correlated. So the ADF is the modified version of Dickey-Fuller Test (DF) which includes extra lagged terms of the dependent variables in order to eliminate the problem of autocorrelation. The lag length of dependent variable is either determined by Akaike Information Criteria (AFC) or Schwartz Bayesian Criteria (SBC). So before apply the ADF test first checked the lowest 25 value of AFC or SBC and then determine the lag length of dependent variable as an explanatory variable. So, if the original time series follows AR (p) process, than the augment Dickey-fuller (ADF) test uses the following regression:

$$\Delta Y_t = \mu_0 + \delta Y_{t-1} + \sum \gamma_i Y_{t-1} + \epsilon_t \quad (3)$$

Equation (3), the residual sequence is now white noise and removes the problem of autocorrelation. So ADF is the better measure to deduct the time series are stationary or not. There is different form of DF and ADF tests, which are possible by including trend (Model 3) and also excluding drift (intercept) term from equation (2) and (3).

THE GRANGER CAUSALITY TEST

C. W. J. Granger (1969) has given causality test in his paper, "Investigating Causal Relationship by Econometrics Models and Cross-spectral Methods". Granger causality test shows the relationship between the variable. "A variable is x is said to be Granger Causes y if and only if the forecast of y is improved by using the past value of x together with the past value of y. in the other words prediction of time series variable (for example Money Supply and Gross Domestic Product) money supply is a function of past value of money supply and past value of GDP and vice versa. So in this test involve following regression:

$$REV_t = \sum \alpha_i EX_{t-1} + \sum \delta_i REV_{t-1} + U_{1t} \dots (4)$$

$$EX_t = \sum \alpha_i EX_{t-1} + \sum \delta_i REV_{t-1} + U_{1t} \dots (5)$$

Then Granger causality test mention four cause:

1. Unidirectional causality from money supply to GDP is indicated if the estimated coefficients on the lagged money supply in equation (5) are statistically significant, different from zero as a group and the set of estimated coefficients on the lagged GDP in equation (6) is not statistically significant different from zero as a group.
2. Unidirectional causality from GDP to Money Supply is indicated if the set of estimated lagged M (5) coefficients are not statistically significant different from zero. And the set of lagged GDP coefficients in (6) is statistically significant different from zero.
3. If the sets of M and GDP coefficients are statistically significant, different from zero in both the regression then it is called the bi directional causality between the variables.

4. If the sets of coefficients money supply and GDP are not statistically significant in both the regressions then is called no causality relationship between variables.
5. The steps involved in the Granger causality test are:

1. Calculate the RSSr (Restricted residual sum of square) from run the regression that current GDP is function of all lagged GDP terms and other variables but not include M variable in the regression.
2. Calculate the RSSur (unrestricted residual sum of square) from run the regression that current GDP is function of all lagged GDP, and other variable and lagged M terms.
3. Formulate the null hypothesis that is lagged M term do not belong in the model.
4. The test hypothesis, rejection and accept the null hypothesis is used the F test is:

$$F = \frac{(RSSr - RSSur)/m}{RSSur / (n - k)}$$

Which follow the F statistics with m and (n - k) degree of freedom. Where m = number of lagged M terms and k = number of parameters estimated in unrestricted regression.

In the decision rule of this test is if the calculated F value exceeds the critical F value at a chosen level of significance, reject in null hypothesis (lagged M terms belong in the model) otherwise accepting it. And it is the called M granger causes GDP."

EMPIRICAL ANALYSIS

This section deals with the issue of econometrics modelling of the causal relationship between revenue and expenditure of states in India. In this purpose, Granger Causality Test is suitable econometrics technique for direction of causality.

Table .1.1 Unit Root Test for Revenue of States

Model (expenditure)	ADF	1%	5%	10%
Level (RRGUJ)	-0.253579 (0.9209)	-3.661661	-2.960411	-2.619160
First Difference(RRGUJ)	-4.962 (0.00)*	-3.670	-2.963972	-2.621007
Level(RRMAH)	-0.468312 (0.8845)	-3.661661	-2.960411	-2.619160
First Difference(RRMAH)	-4.988477 (0.00)*	-3.679322	-2.967767	-2.622989
Level(RRORI)	1.219414 (0.9976)	-3.661661	-2.960411	-2.619160
First Difference(RRORI)	-7.009675 (0.00)*	-3.670170	-2.963972	-2.621007
Level(RRUP)	0.412925 (0.9803)	-3.661661	-2.960411	-2.619160
First Difference(RRUP)	-5.509709 (0.00)*	-3.670170	-2.963972	-2.621007
Level(RRBIH)	-0.338589 (0.9077)	-3.661661	-2.619160	2.960411
First Difference(RRBIH)	-4.899100 (0.00)*	-3.670170	-2.963972	-2.621007

*significant at the 1% level **significant at the 5% level ***significant at the 10% level

#Own Calculation

Table 1.1 presents the result of the ADF tests on revenue variable in levels and first difference. The unit root test carried out by assuming both constant and linear trend in data. In the case, when variables are in level form, the null hypothesis of nonstationarity cannot be rejected for any of the series, the calculated value is less than the critical value of the test statistics for series,

therefore, and the series are non-stationary at levels. Applying the same test for first difference variables to determine the order of integration, then critical value is greater than calculated value of the test statistics for the variables. The null hypothesis can be accepted for the series at first difference with constant. We conclude that the series contain a constant without deterministic time trend.

Table 1.2 Unit Root Test for Expenditure of States

Model (expenditure)	ADF	1%	5%	10%
Level (EXGUJ)	-1.671578 (0.4353)	-3.661661	-2.960411	-2.619160
First Difference(EXGUJ)	-3.806087 (0.00)*	-3.670170	-2.963972	-2.621007
Level(EXMAH)	-1.408420 (0.5654)	-3.661661	-2.960411	-2.619160
First Difference(EXMAH)	-5.665942 (0.00)*	-3.670170	-2.963972	-2.621007
Level(EXORI)	-0.348196 (0.9062)	-3.661661	-2.960411	-2.619160
First Difference(EXORI)	-7.698168 (0.00)*	-3.670170	-2.963972	-2.621007
Level(EXUP)	-0.962865 (0.7538)	-3.661661	-2.960411	-2.619160
First Difference(EXUP)	-6.994670 (0.00)*	-3.670170	-2.963972	-2.621007
Level(EXBIH)	-0.998838 (0.7412)	-3.661661	-2.960411	-2.619160
First Difference(EXBIH)	-4.634750 (0.00)*	-3.670170	-2.963972	-2.621007

*significant at the 1% level **significant at the 5% level ***significant at the 10% level

#Own Calculation

Table 1.2 presents the result of the ADF tests on expenditure variable in levels and first difference. The unit root test carried out by assuming both constant and linear trend in data. In the case, when variables are in level form, the null hypothesis of nonstationarity cannot be rejected for any of the series, the calculated value is less than the critical value of the test statistics for series,

therefore, and the series are non-stationary at levels. Applying the same test for first difference variables to determine the order of integration, then critical value is greater than calculated value of the test statistics for the variables. The null hypothesis can be accepted for the series at first difference with constant. We conclude that the series contain a constant without deterministic time trend.

Table .2 Granger Causality test for revenue and expenditure

Null hypothesis	Lags	F statics	Pvalue	Direction of Causality
RRMA does not Granger Cause EX_MAH	3	4.51140	0.0130	Unidirectional
EX_MAH does not Granger Cause RRMA		0.61394	0.6132	
RRGUJ does not Granger Cause EXMA	6	5.90796	0.0036	Unidirectional
EXMA does not Granger Cause RRGUJ		1.65685	0.2092	
RRODI does not Granger Cause EXODI	4	4.42343	0.0107	Bidirectional
RRODI does not Granger Cause EXODI		2.43767	0.0825	
RRUP does not Granger Cause EXUP	1	6.66948	0.0153	Unidirectional
EXUP does not Granger Cause RRUP		0.00803	0.9292	
RRBI does not Granger Cause EXB	1	8.42245	0.0071	Bidirectional
EXBI does not Granger Cause RRBI		3.92435	0.0575	

Table .2 shows that the Granger causality test is used on annual data of total expenditure and total revenue of five states. This test is also analysed on the actual data in log series and relationship tested between expenditure and revenue in table.3. This table summarized the result of granger causality test to find out the relation between revenue and expenditure at different lags. In granger test, for the equation with expenditure as a dependent variable, the null hypothesis is that the lagged valued of revenue receipt does not granger cause expenditure. For the equation with revenue as a dependent variable, the null hypothesis is that the lagged value of expenditure does not granger causes revenue receipt. For granger causality economic variable must be stationary which have been proved by the unit root test that total expenditure and total revenue are stationary at 1st difference with constant.. This same result has found at different lags. So the result supports unidirectional causality in Gujarat, Maharashtra and Uttar Pradesh that unidirectional causality between expenditure and revenue receipts. Another side the result supports bidirectional causality in Orissa and Bihar.

SUMMARY AND CONCLUSION

In this paper, we investigate the causal relationship between revenue and expenditure by using the annual data 1980-2012. This paper applies Granger causality test to test the causal relation between state government revenue and expenditure during the period 1980- 2012. The unit root test based on ADF test proposed by Dickey & Fuller (1979) shows that the variables are non-

stationary in levels but stationary in the first difference with constant but not linear trend is accepted for variables. The results from Granger causality test suggest unidirectional causality between revenue and expenditures in Gujarat, Maharashtra and Uttar Pradesh but bidirectional causality between revenue and expenditure in Orissa and Bihar. In the long-run, Gujarat, Maharashtra and Uttar Pradesh support the “spend tax hypothesis”. Therefore the state government decide spend first and then raise tax revenue and request for grants to finance its expenditure rather than adopting the method of raising funds first and collect revenue and take decision to spending later according the revenue. But Orissa and Bihar support the “fiscal synchronisation hypothesis”. The state government determine revenue and expenditure concurrently.

REFERENCE

1. Baghestani, H. and R. McNowen (1994), “Do Revenues or Expenditures Respond to Budget Disequilibria?” *Southern Economic Journal*, Volume 61, pp. 311–322.
2. Barro, R. J (1974), “Are Government Bonds Net Wealth?” *Journal of Political Economy*, Volume 82, pp. 1095–1118.
3. Barro, R. J (1990), “Government Spending in a Simple Model of Endogenous Growth”, *Journal of Political Economy*, Volume 98, pp.103-126
4. Bhat, K. S., V. Nirmala and B. Kamaiah (1993), “Causality between TaxRevenue and Expenditure of Indian States”, *The Indian EconomicJournal*, 40, 109-17.

5. Blackley, P. R (1986), "Causality Between Revenues and Expenditures and the Size of the Federal Budget", *Public Finance Quarterly*, Volume 14, pp.139–56.
6. Bohn, H (1991), "Budget balance through revenue or spending adjustments: Some historical evidence for the United States", *Journal of Monetary Economics*, Volume 27, pp.333–59.
7. Buchanan, J.M and Wagner. R.W (1977), "Democracy in Deficit", New York: Academic Press.
8. Buchanan, J.M and Wagner. R.W (1978), "Dialogues concerning fiscal religion", *Journal of Monetary Economics*, Volume 4, pp.627–36.
9. Darrat, A.F (1998), "Tax and Spend, or Spend and Tax? An Inquiry into the Turkish Budgetary Process", *Southern Economic Journal*, Volume 64, Issue 4, pp. 840–956.
10. Dhanasekaran, K (2001), "Government Tax Revenue, Expenditure and Causality: The Experience of India", *Indian Economic Review*, 2, 359-379.
11. Dickey, D. A. and W. A. Fuller (1979), "Distribution of the Estimators for Autoregressive Time Series with a Unit Root," *Journal of American Statistical Association*, Volume 74, pp. 427–31.
12. Ewing, B. and J. Payne (1998), "Government Tax Revenue-Expenditure Nexus: Evidence from Latin America," *Journal of Economic Development*, Volume 23, pp. 57–69.
13. Friedman, M (1978), "The limitations of tax limitations", *Policy Review*, Volume 5, pp.7–14.
14. Granger, C.W.J (1969), "Investigating Causal Relations by Econometric Models and Cross Spectral Methods", *Econometrica*, Volume 37, pp.424–38.
15. Joulfaian, D. and R. Mookerjee (1991), "Dynamic of Government Revenues and Expenditures In Industrial Economics", *Applied Economics*, Volume 23, pp.1839–44.
16. Meltzer, A. H. and Richard, S. P (1981), "A Rational Theory of the Size of Government", *Journal of Political Economy*, Volume 89, pp.914–27.
17. Nithin, K. (2015), "Fiscal reaction function: panel evidence from Indian states", *Global Business and Economic Research Journal*, ISSN 2302-4593.