Tax revenue and economic growth in india

Since a long time it has been the consensus that mobilization of resources is a sine qua non for the planned economic development of a country. Optimum resource mobilization ensures increase in output, income and employment in an economy. Thus, it has been considered as the means to attain a high and rapid economic growth. The case of India is no exception. The development plans in India have been giving highest priority to the optimal mobilization of resources. In India the role of taxation as a source of resource mobilization is very significant. In 1950-51 when the planning process was initiated, the ratio of total tax revenue to Gross Domestic Product was as low as 6. 22%. Since then it has been rising steadily and it was 19. 52% in the fiscal year 2008-09. For a developing country like India which started its development effort with a very low per capita income and has recorded an extremely modest rate of growth, this record in mobilising tax revenue is remarkably good by any standard.

In India, tax revenue refers to the compulsory transfers to the central government for public purposes. But it excludes certain compulsory transfers such as fines, penalties, and most social security contributions. The government collects tax revenue by imposing both direct and indirect taxes. Direct taxes include income tax, estate duty, wealth tax, gift tax, land revenue, hotel receipts tax, and expenditure tax. Similarly, indirect taxes include customs duty, union excise duties, service tax, state excise duty, value added tax, taxes on vehicles, taxes on electricity and taxes on goods and passengers.

In 19990s, the gross tax revenues as a ratio of Gross Domestic Product remained stagnant at around 8 to 10% level in the face of reforms of the tax

structure that entailed reduction in indirect taxes and which was not fully compensated by the rise in direct taxes. But in last five years ending 2007-08, the gross tax revenue grew at an average annual rate of 22. 4% which was composed of an annual average growth of 16. 3% in indirect taxes and 29% in direct taxes. From 2007-08 onwards there has been increase in direct tax collections relative to indirect tax collections. In the class of direct taxes, the main contribution came from corporate income tax and within indirect taxes, while excise revenues remained less buoyant, customs revenue grew somewhat steadily, and service tax emerged as the main driver of revenue growth (See Table 1). It is very important that the proportion of gross tax revenue to total government revenue which was 70% in 2003-04 increased to 81% in 2007-08 and to 82% (approximately) in 2008-09.

Table 1: Sources of Tax Revenue in India

includes taxes referred in (a) & (b) and taxes of Union Territories and “ other” taxes

* Refers to gross domestic product at current market prices

BE: Budgetary Estimates

RE: Revised Estimates

Source: Economic Survey of India, 2008-09

Therefore, taxes play a major role in generation of revenue and hence, in the economic growth of the country. Insufficient tax revenue can distort resource allocation and reduce the economic welfare and growth. Hence, an ideal buoyant tax system is essential to achieve a balance between resource

allocation and economic growth with stability. However, it is crucial to note that an ideal tax system always has to compromise between the government’s revenue and the economic development of the country. A tax system with relatively higher rates of taxes would deter savings and development, while a relatively lower tax rates would lead to less revenue to the state. A tax directly influences the savings of individuals and companies; it is a double edged sword used to curtail consumption activity and at the same time, allows the taxpayer to save money in different development activities (Swami, 1995).

Looking at this critical role of taxes, World Bank periodically relates that economic development is directly correlated to the level of taxation, more so in developing nations where the lower marginal tax rates have higher economic growth effects. Besides, the policy makers in developing countries have a dedicated interest in the elasticity of economic activity with respect to taxes, suggesting that states and regions are interested in manipulating their tax systems in an attempt to attract business or to foster growth (Wasylenko, 1997).

Schumpeter (1942) emphasized the role of entrepreneurial activity in generating new ideas that raise productivity. The explicit investments made by the entrepreneurs in the creation of new ideas generate growth. A recent literature argues that the tax structure of a country can affect the rate of entrepreneurial activity and the rate of creation of new ideas and so the rate of economic growth. Cullen and Gordon (2002) shows that there are several possible routes through which taxes can affect the amount of entrepreneurial risk-taking.

At first, there is a tax encouragement to being self-employed when the effective tax rate on business income is less than the tax rate on wage and salary income. This would occur to the extent that the corporate income tax rate is below marginal personal income tax rates.

Second, the entrepreneurial risk-taking activities are affected by the tax structure to the extent that profits and losses are taxed at different marginal tax rates. In particular, when personal income tax rates are above the corporate income tax rate, entrepreneurs would report any losses as non-corporate losses, and any profits as corporate income, thereby facing a subsidy to risk-taking to the extent that the corporate income tax rate is below personal income tax rates.

Third, when entrepreneurs are risk averse, taxes also provide risk-sharing with the government. If the financial markets are not effective at sharing risks efficiently, at least for small firms, then entrepreneurial activity can be an increasing function of overall effective tax rates.

Therefore, taxes do have the forces to influence entrepreneurial activities thereby contributing to the economic growth of a country. It is with this backdrop, this paper aims at investigating the causal relationship between the tax revenue and the economic growth in India for the period 1950-51 to 2008-09. The rest of the paper is organised as follows: Section II discusses the data and methodology, Section III make the empirical analysis and Section IV concludes.

Data and Methodology

The objective of this paper is to examine the causality between tax revenue and economic growth in India. The sample period of the study spans from 1950-51 to 2008-09. The study uses annual data collected from the Economic Survey of India, 2008-09, Indian Public Finance Statistics, 2008-09 published by Ministry of Finance and Handbook of statistics on Indian Economy, 2008-09 published by Reserve Bank of India. The time series concerning Tax Revenue (TR) for the sample period is the total of revenues from direct and indirect taxes. The Economic Growth (EG) of India has been measured by the proxy, Gross Domestic Product (GDP) at factor cost by industry of origin at constant prices. This proxy is justified in that the revenue from corporate income tax dominates the gross tax revenue in India. All the variables of the study have been considered in their natural logarithm forms for obvious reasons and denoted by LTR and LGDP for natural logarithm of Tax Revenue and GDP respectively.

The study employs the Granger causality test in the Vector Autoregressive Regression framework. This necessitates the empirical analysis to be performed in three steps: First, the stationarity test; second, the Cointegration test; third, the Granger causality test.

Unit Root Test:

The Granger Causality test presupposes the stationarity in the data. So the most popular Augmented Dickey-Fuller Unit Root Test as proposed by Dickey and Fuller (1981) has been used for checking stationarity of the time series.

The ADF unit root test requires the estimation of the following regression:

where is the first differences of the, is the intercept, are the coefficients, is the time or trend variable, is the number of lagged terms chosen to ensure that is the white noise. The optimal lag length of is selected by using the Schwarz's information criteria (SIC) suggested by Schwarz. The hypotheses of this test are:

: , i. e., there is a unit root & the time series is non-stationary.

: , i. e., there is no unit root & the time series is stationary.

If the estimated – statistic (ADF test statistic) is found to be less than the critical value, the null hypothesis is accepted, otherwise rejected.

If the variables are stationary at level, they are said to be integrated of order zero, i. e., I(0). If they are non-stationary at level, the ADF test is to be applied at the first difference. In this case the variables are said to be cointegrated of order one, i. e., I(1), if variables are stationary.

Cointegration Test:

In time series econometrics, two variables will be cointegrated if they have long-term, or equilibrium relationship between them (Engle and Granger, 1987). Thus, in this study cointegration analysis has been performed to investigate long term relationship between gross tax revenue and the economic growth in India. The purpose of the cointegration test is to determine whether a group of non-stationary series are cointegrated or not. We implement VAR-based cointegration test using the methodology developed by Johansen (1991, 1995). The vector autoregressive (VAR) model as considered in this study is:

Where is a -vector of non-stationary I(1) endogenous variables, is a -vector of exogenous deterministic variables, are matrices of coefficients to be estimated, and is a vector of innovations that may be contemporaneously correlated but are uncorrelated with their own lagged values and uncorrelated with all of the right-hand side variables.

Since most of the time series are non-stationary, the above stated VAR model is generally estimated in its first-difference form as:

Where,

Granger's representation theorem asserts that if the coefficient matrix has reduced rank, then there exist matrices each with rank such that is I(0). is the number of co-integrating relations (the co-integrating rank) and each column of is the co-integrating vector. is the matrix of error correction parameters that measure the speed of adjustments in .

The Johansen approach to cointegration test is based on two test statistics, viz., the trace test statistic, and the maximum eigenvalue test statistic.

A. Trace Test Statistic:

The trace test statistic can be specified as: where is the largest eigenvalue of matrix , and T is the number of observations. In the trace test, the null hypothesis is that the number of distinct cointegrating vector(s) is less than or equal to the number of cointegration relations ().

B. Maximum Eigenvalue Test:

The maximum eigenvalue test examines the null hypothesis of exactly cointegrating relations against the alternative of cointegrating relations with

the test statistic: where is the largest squared eigenvalue. In the trace test, the null hypothesis of is tested against the alternative of cointegrating vectors.

Granger Causality Test:

This study uses Granger Causality Test proposed by C. W. J. Granger (1969) for testing the causality between tax revenue and economic growth in India. This test in the VAR framework formulates the null and alternative hypotheses as:

H0: No causal relation between tax revenue and economic growth

H1: Causality between tax revenue and economic growth

These hypotheses are tested in the context of the VAR of the form:

where EG is the economic growth of India as measured by Real GDP and TR is the tax revenue of the government of India. As is evident from the time series literature, the Granger Causality Test is very sensitive to number of lags included in the model. In view of this, the Schwarz Information Criterion (SIC) for the selection of appropriate lag length has been used.

Empirical Analysis

At the outset, we have examined the degree of correlation between the tax revenue and real GDP in India. The Pearson’s correlation coefficient computed is 0. 96 with the t-statistic of 25. 88 at 57 degrees of freedom. Since the computed t-value is greater than the critical t-value at 1% level of significance, the Pearson’s correlation coefficient is very significant.

Fig. 1: Co-Movement of Tax Revenue and Real GDP in India

It is clear from the Fig. 1 that the total tax revenue and Real GDP moves in the same direction. This is the indication of high degree of positive correlation between the two and it is also the indication of the existence of causal relation between them. But the direction of causality is very important. And, to know the direction of causal relation we have applied Granger causality test in the VAR model.

Since VAR model presumes stationarity of all the variables, we have tested the stationarity and thus, the order of integration of the variables using the most popular ADF unit root test. The descriptive statistics and the ADF unit root test of the variables are presented in Table 2.

The ADF test statistics at the first difference level for both the variables are more negative than the critical values at 1% level of significance. This shows that all the variables of the study, i. e., tax revenue and GDP in the log level forms contain unit roots but do not contain unit roots at first differences. This implies that the variables are stationary at first differences. Thus, the variables are integrated of same order, i. e., I(1).

As the next step of Granger causality test, we have tested the cointegration between the variables of the study and the results of Johansen cointegration test are reported in Table-3. The Trace test indicates the existence of two cointegrating equations at 5% level of significance. And, the maximum eigenvalue test makes the confirmation of this result. Thus, the two variables of this study have long-run equilibrium relationship between them.

Now, the Granger causality test has been performed to determine the direction of causation between the two variables of the study in the environment of VAR. This VAR model uses the lag length up to 3 as determined by Akaike Information Criteria (AIC). The results of the Granger Causality Test are shown in the Table 4.

Since the computed F-statistics is greater than the critical F-value at 5% level of significance, both the null hypotheses are rejected. This indicates that the economic growth in India as measured by Real GDP causes tax revenue and also tax revenue causes economic growth in India. Thus, the reported results provide the evidence of the existence of feedback or bilateral causality between tax revenue and economic growth in India. This feedback causality may mean that the increase in real GDP increases total tax revenue in India. On the other hand, such a relation may be interpreted as the efficient mobilisation of tax revenue for the economic growth of the country.

Conclusion

This paper examined the causality between the gross tax revenue and economic growth in India over the period 1950-51 to 2008-09. As an essential pre-requisite of the causality test, both the time series of the study have been tested for the stationarity by the ADF unit root test and found that the variables stationary at their log first difference forms. Then the Johansen’s cointegration test has been performed to investigate the long run equilibrium relationship between the variables and found that there exist two cointegrating equations thereby indicating the presence of long run equilibrium relationship. Finally, the Granger causality test has been

performed in the vector autoregressive model and the test reported the existence of feedback causality between the total tax revenue and the economic growth in India. Therefore, the outlook may be that the economists and policy makers should take all the necessary steps to make the Indian tax system ideal, efficient and buoyant so that a higher economic growth may be achieved in the long-run. However, an ideal tax system is not the only macro-economic variable influencing the economic growth of the country. Hence, to make the empirical study more robust, other important macro-economic parameters such as rate of inflation, rate of capital formation, propensity to consume, and propensity to save etc. should be incorporated in the analysis.