

AN EMPIRICAL ANALYSIS OF TAX REVENUE BUOYANCY IN JAMMU AND KASHMIR

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Abstract

Taxation is a powerful instrument to finance the deficits of a country. Buoyancy of Tax is a degree of the sensitivity of tax incomes to economic growth. tax is said to be buoyant when revenues increase by more than one percent for a one percent rise in output or national income (Audi, M. et. al. 2021). This paper is an attempt to examine the buoyancy of Tax revenue of J&K. The data is of time series nature covering the period from 2000- 01 to 2019-20 entirely relies on the secondary sources. The Augmented Dickey-fuller test has been used to check the unit root of the data. Ordinary least square method of regression has been used to estimate the buoyancy of tax revenue in Jammu and Kashmir. The results show that the buoyancy of all the major taxes is less than 1 except for other taxes (other taxes include many taxes). The implication is that the tax system did yield a less than 1 percent change resulting from economic activity, for every 1 percent change in GDP.

Keywords: *Tax buoyancy, GSDP, Augmented- Dickey-fuller, Regression*

Introduction

In the present scenario, the role of an administration is not limited only to deliver basic amenities to the people. For developed countries particularly India is characterised by a demographic dividend and on other side massive poverty and unemployment are posing a challenge. Since freedom, India is executing so many development led programmes to meet the ever-growing challenges. For this, the administration needed more public income in order to invest in social and overhead capital which are vital for the growth of a nation as they are having more relations with the other sectors of an economy. Only government has to capitalise in such activities as they are having long maturation periods. This requires huge investment and for the administration the important foundation to generate revenue is tax revenue. But in Indian context the tax revenue is not satisfactory as some of the economic undertakings such as agrarian income is an omission till today in rural areas and the increasing unorganised sector does not completely come under the tax horizon in urban areas. As per Economic Survey of 2014-15, in the

immediate post-Fiscal Reforms and Budget Management Act (FRBM) 2003 period (2004-05 to 2007-08) noteworthy fiscal alliance was achieved mainly due to growth in tax incomes. Post-2008 crisis, growth in aggregate gross tax revenue (GTR) as well as its main constituents (with the exclusion of personal income tax) was not buoyant sufficient to facilitate extra performance in terms of revenue-led financial consolidation (Economic Survey, 2014-15).

Tax buoyancy is a degree of the sensitivity of tax incomes to economic growth. A tax which is buoyant is one whose proceeds increase by more than one percent for a one percent rise in output or national income. In measuring buoyancy, no effort is made to control for discretionary changes in the tax structure. Therefore, buoyancy reflects both automatic revenue growth and discretionary changes. Tax buoyancy can be written as

$$\text{Tax Buoyancy} = \frac{\% \Delta T}{\% \Delta Y}$$

Where: $\% \Delta T$ = percentage change in tax revenue, and $\% \Delta Y$ = percentage change in income or GDP.

The buoyancy of tax measures the sensitivity of tax proceeds to changes in GDP or income without adjusting for the discretionary fluctuations in tax policy. The discretionary fluctuations are the changes which result in more tax income from the similar tax base. The bases of such changes are changes in tax legislature or changes in the tax rate (Osoro 1993). Jayasundera (1991) describes that the buoyancy of a tax structure reflects the total response of tax proceeds to changes in output or national income as well as effects of discretionary changes in tax strategies over time.

The purpose of the present study is to utilize tax income data of Jammu and Kashmir to estimate tax buoyancies using different techniques and to evaluate these techniques based on the valuation.

Literature Review

(Samwel & Isaac, 2012) carried a study on “Elasticity and Buoyancy of Tax Components and Tax Systems in Kenya”. The paper analysed the buoyancy and elasticity of tax constituents and tax structure in Kenya by using the time series data. The data used in this study was found to be a non-stationary data, thus running the first difference, the study ascertained that a declining percentage of incremental income was shifted to the administration in the form of tax income, suggesting that the tax system was not that much considerably buoyant, the study also found that a declining percentage of incremental income was shifted to the govt. in the form of tax revenues, thus implied that in Kenya the tax systems were neither buoyant nor elastic over the study period. Excise and income tax have a buoyancy value of 1. The

analysis, therefore, suggests the amendment of the tax modernization policies as well as the building up of the tax administration process.

(Hamlet, 2013) The study focuses on measuring the elasticity and buoyancy of various taxes for the (ECCU) Eastern Caribbean Currency Union especially, for Antigua, Dominic, Barbuda, and St. Lucia, during 1980-2010. The findings revealed that the aggregate tax for St. Lucia and Dominica grew @ 1.04 to 0.99, respectively, whereas for Barbuda and Antigua the rate is 1.07. The analysis found that the taxes for Barbuda, St. Lucia, Antigua, and Dominica are buoyant after the tax reforms. **(Mawia & Nzomoi, 2013)** This study used a time series approach to measures the buoyancy of tax for Kenya from the period 1999-2000 to 2010-2011. Tax buoyancies were calculated for import, income, excise, VAT, and total taxes. Especially, the paper analysed the buoyancies of tax revenues to changes in gross domestic product and proxy bases used quarterly data rather than annual data of gross domestic product and tax revenues and their bases. The authors also examined the buoyancy of tax of Pay as You Earn (PAYE), other income tax, as constituents of income tax, and local and import value-added tax as constituents of aggregate value-added tax. This was done to find out the sensitivity of these specific taxes to their bases. Empirical proof revealed that the aggregate tax was buoyant with a value of more than 1(2.58) although the individual taxes were not buoyant except the excise duty which was buoyant concerning the base. Tax bases were found to react well to monetary variations with buoyancy coefficients more than 1, with exclusion of excise duty base to income buoyancy values being less than 1. Given the findings, the authors suggest a steady review of the tax structure as the economic design alters. And also suggested that the purpose behind the tax avoidance ought to be investigated to help minimize non-compliance.

(Belinga, Benedek, Mooij, & Norregaard, 2014) The study evaluated long-run and short-run buoyancy of tax in OECD countries from 1965 to 2012. It uses an Error Correction Model (ECM) that concurrently measures a long-term association, short-run effects, and speed of adjustment. The principal contributions are binary. Firstly, they estimated tax buoyancy of total revenue for each OECD country individually, and in a panel of all OECD nations. The analysis also focuses on tax buoyancy in the panel throughout two distinct occasions. Secondly, the buoyancy of 6 different tax revenue constituents was measured by using panel regressions. The study found that for total tax incomes, shortrun tax buoyancy does not remarkably vary from 1 in most of the nations, yet, it shows an increment since the late 1980s so that tax systems have normally become the best self-correcting stabilizers. Long-run buoyancy surpasses 1 in almost one-half of the OECD nations, suggesting that gross domestic product growth has assisted to boost structural budgetary deficit ratios. Corporate taxes are most buoyant, but excise and property taxes

are less buoyant. For personal income taxes and social contributions, short run and long-run buoyancies have decreased since the late 1980s and have on average become less than 1.

(Krushna, 2015) The aim of the paper is to analyse the buoyancy of tax in India from 1950 to 2010. This all period was divided into 5 decades and noticed buoyancy of tax in each decade. Log-linear regression technique was used to analyse the buoyancy of tax. The significant inference of the positive regression coefficient is that the momentary growth of tax income is more than that of national income. From the regression investigation, it is observed that during the entire fifty years the tax buoyancy is higher than that of national income. But the tax buoyancy is much more in the 1960s and 1970s. From the 1980s to the 2000s the tax buoyancy is almost steady. The decade-wise variation in tax revenue due to a 1% increase in GDP is analysed through variation in the regression coefficient of each decade. Now, the important fact is that from the 1950s to the 1960s the tax income shows increment by 1.7 %, and from the 1960s to 1970s the rise in tax revenue is only 0.6 %. From the 1970s to the 1980s the increase in tax revenue saw a drastic decline by 2.2 %. Beyond that, the change in tax revenue noticed a declining pattern but the level of decline is not excessively high.

(Sethi & Teja, 2015) The study aimed at estimating buoyancy of tax in respect of 17 major states of India, and also making an analysis of differentials, if any, among the buoyancy coefficients during the pre-and post-reforms era. The study used multiple time series analytical techniques. The study found that the buoyancy values were, in general, less than 1, thus showing the low sensitiveness of taxes to income. The examination further showed that the coefficients of buoyancy in respect of each of aggregate revenue, non-Tax revenue, and tax revenue had a propensity to be comparatively less during post reforms era vis-à-vis the pre-reforms era, thus implying towards an adverse influence of the liberalization, privatization and globalization policy measures towards income generation.

(Vadikar & Rami, 2018) “Tax buoyancy and elasticity in India: A log regression model” The paper looks into the tax elasticity and buoyancy of tax of State, centre and Combine government from 1990-91 - 2015-16. The study also compares the elasticity of tax and buoyancy of tax for different periods. The study used a model of log regression with the aid of E-views software to compute the coefficient value. The study concluded that discriminatory changes and GDP growth both have been found tax productive. The study also showed that the State Governments are more tax productive than the central government.

(Paliwal, Saxena, & Pandey, 2019) The objective of the study is to examine the effects of newly implemented GST on taxable income in India. The study used the tax buoyancy perspective for examining the effects of Goods and services tax on tax revenue. The analysis used a semi-logarithmic ANCOVA (Analysis of co-variance) model of regression in which GST and VAT act as dummy

variables. The analysis concluded that after the implementation of the Goods and services tax, India's tax income has become less buoyant. The study indicated that after the implementation of the goods and services tax there is some decrease in the tax burden on the corporates and customers which defends the govts. rational behind the implementation of Goods and services tax.

The objective of the study

The objective of the study is to examine the buoyancy of tax revenue in Jammu and Kashmir from 2000- 01 to 2019-20.

Data type and Sources

The study has been carried out to analyse the buoyancy of tax revenue of Jammu and Kashmir State. The data is of time series nature covering the period from 2000- 01 to 2019-20 entirely relies on the secondary sources collected from RBI website, quarterly and annual performance reviews. The major source of data is a handbook of statistics on Indian states.

Transformation of Data

The data has been transformed into the log form in order to arrive at the normal distribution. Mostly, the time series data are inconsistent and irregular, so, logarithmic transformations are sometimes necessary to reduce the complexity of data. Similarly, time series data for GDPs converted from their nominal values to their real values by dividing nominal values with the GDP deflator using 2011-12 as the base year.

Tax Categories and Relevant Bases

Tax Category	Base for regression
Total Tax Revenue	GSDP
Own Tax Revenue	GSDP
Other Major Taxes	GSDP

Methodology Adopted to the present study

The present study has been carried out to empirically measure the buoyancy of the tax revenue of Jammu and Kashmir state. The data used for the analysis is of time series nature covering the period from 2000-01 to 2019-20. There are many techniques in the literature to empirically estimate the tax buoyancy. The present study has been carried out to empirically measure the elasticity and buoyancy of the tax revenue of Jammu and Kashmir state. The data used for the analysis is of time series nature covering the period from 2005- to 2020. There are numerous methods in the literature to empirically estimate the tax

buoyancy and tax elasticity. Most studies on tax buoyancy utilize the Ordinary Least Square (OLS) approach in assessing the buoyancy coefficients and this technique has a condition that the time series be stationary. If a non-stationary time series is used to estimate OLS, then the results of the estimation may be statistically unreliable. So, in our study we have employed the OLS method to estimate the buoyancy of the tax revenue.

As for our current study we are working with time series data, it is important to check for the many issues related to time series dynamics. One of the most cited issues for the time series is the presence of unit root. Once the problem of the unit root is detected, the next step is to determine the order of integration meaning at which difference the series will turn to be stationary. In the presence of such a problem, we can run a spurious regression with very high R^2 suggesting a strong correlation though in actuality this may be not the case. Such a problem renders the model useless as we can neither predict accurately nor we can prescribe any policy prescription which is the main objective of such a model. So, to check for the problem we have employed the Augmented Dickey Fuller test. If the calculated statistics are more than the critical values, then the variable $[\log(\text{GSDP})]$ and $[\log(\text{Tax})]$ are level stationary or integrated of order zero i.e., $\log(\text{GSDP}) \sim I(0)$ and $\log(\text{Tax}) \sim I(0)$. However, if the calculated statistics are less than the critical then the series exhibits the unit root and the next step will be then to find the order of integration. However, all the latest software packages give us the probability value which helps us to directly decide whether a series has a unit root or not.

Data Analysis

The study was analysed by using the STATA, EXCEL and SPSS statistical software's. The separate regression coefficients were taken as the tax buoyancy estimates. In assessing model parameters using OLS method, the equation was linearised by taking variables logs in the model. Buoyancy of tax was assessed without correcting for discretionary changes.

Empirical Results

Test for Unit Root

The assumption of the classical linear regression model is that both the dependent and independent variables used in the model are stationary. In the present study, Augmented Dickey-Fuller test is carried out to check the unit root of the data. Whether to reject or not to reject the null hypothesis, the present study compares the ADF statistics with the critical values. If the statistics value is more than the critical values, then the null hypothesis is rejected and end up with the conclusion that the series does not contain

the presence of unit root and is stationary in nature. Accordingly, on the same lines the decision is by comparing the probability values. Subsequently, the study is undertaken at 95 per cent confidence level, the level of significance is 5 per cent. The inference here is that, if the probability value computed is greater than 5 per cent, the null hypothesis is not overruled. The conclusion in this situation is that, there is the occurrence of a unit root and so the series is not stationary. Table 1.1 represents the results of the unit root tests both at levels and 1st differences.

Stationarity Test: Using ADF Method

H0: The variable has a unit root

Estimated result of Augmented Dickey-Fuller Unit Root test statistic

Table 1.1

S.No.	Variables	At Level				1st difference Stationary 1(1)			
		t- statistic	5 %	1 0%	p- value	t- statistic	5 %	10 %	p- value
01	Ln GSDP	- 1.139	- 3.600	- 3.240	0.9 223	- 4.965	- 3.612	- 3.242	0.00 02
02	Ln TTR	- 4.375	- 3.600	- 3.240	0.2 204	- 4.550	- 3.612	- 3.242	0.00 12
03	Ln OTR	- 1.910	- 3.600	- 3.240	0.6 497	- 4.922	- 3.612	- 3.242	0.00 03
04	Ln TST	- 2.020	- 3.600	- 3.240	0.5 905	- 4.523	- 3.612	- 3.242	0.00 14
05	Ln SED	- 0.917	- 3.600	- 3.240	0.9 543	- 3.785	- 3.612	- 3.242	0.04 10
06	Ln TOV	- 2.319	- 3.600	- 3.240	0.4 233	- 6.572	- 3.612	- 3.242	0.00 00
07	Ln SRD	- 1.953	- 3.600	- 3.240	0.6 267	- 3.674	- 3.612	- 3.242	0.05 50
08	Ln LR	- 1.661	- 3.600	- 3.240	0.7 676	- 5.794	- 3.612	- 3.242	0.00 00
09	Ln TIE	- 3.184	- 3.600	- 3.240	0.0 876	- 3.852	- 3.612	- 3.242	0.01 41
10	Ln UED	- 2.709	- 3.600	- 3.240	0.2 325	- 4.430	- 3.612	- 3.242	0.00 20
11	Ln TGP	- 1.790	- 3.600	- 3.240	0.7 097	- 4.130	- 3.612	- 3.242	0.00 57

12	Ln OT	-	-	-	0.9	-	-	-	0.00
		1.011	3.600	3.240	427	5.185	3.612	3.242	01

All variables under investigation were found non-stationary at level and after first difference all the variables are stationary. Thus, we can say that all the variables are having an integrated of order 1.

Buoyancy of Total tax Revenue, Own Tax Revenue and Major taxes of Jammu and Kashmir

Table1.2

Estimated result of Tax buoyancy of major taxes of Jammu and Kashmir						
Va riables	Definition of Variables	Buo yancy coefficien t	R ²	T- Statistic	D W	S ig.
TT R	Total Tax Revenue	0.85	0. 94	3.10	2.6 2	. 006
OT R	Own Tax Revenue	0.61	0. 91	2.06	2.6 0	. 051
TS T*	Taxes on Sales and Trade	0.80	0. 90	1.77	2.1 8	. 054
SE D	State Excise Duty	0.60	0. 79	2.18	1.2 4	. 045
TO V	Taxes on vehicles	0.20	0. 85	4.51	2.7 6	. 044
SR D	Stamp and Registration Duty	0.86	0. 96	8.14	1.8 4	. 026
LR	Land Revenue	0.04	0. 64	7.07	2.6 2	. 018
TI E	Taxes on Income and	0.80	0. 95	2.97	1.9 2	. 099

	Expenditure					
UE	Union	0.44	0.	3.48	2.2	.
D	Excise Duty		96		9	021
TG	Taxes on	0.91	0.	3.69	1.6	.
P	goods and passengers		97		9	000
OT	Other	1.08	0.	4.70	2.5	.
**	Taxes		96		1	001

sources: calculated by Author*significance at 5 percent, DW= Durbin-Watson stat

*TST= taxes on sales and trade (also includes services tax, VAT= Value added tax)

**Other taxes (include electricity duty immovable property tax customs, entertainment tax etc), GST= Goods and Services Tax.

The time series analysis of the tax buoyancy of Jammu and Kashmir State in table 1.2 indicates that the tax structure of J&K state between 2000-01 to 2019-20 was not buoyant. Tax system of the state is not sensitive with changes in the GSDP or income of the state and the buoyancy coefficients are less than unity except for other taxes because other taxes include many taxes. The table also reveals that the buoyancy of the total tax income is significant with the buoyancy coefficient of 0.85 with R^2 of 95%. The inference is that the tax structure yields a 0.85% change in tax proceeds, resulting from an economic activity, for every 1 per cent change in GSDP. In terms of total tax income of the J&K state which occupy nearly 23 percent of total income of the J&K state, has buoyancy value of 0.85 percent. The less tax buoyancy of the J&K's total tax proceeds in terms of income demonstrates that the tax structure is not progressive in nature. The slow response of total tax revenue with change in the GSDP of the state income is due to income tax exemption in J&K over the period, and only few taxes were under income tax basket and remaining taxes are either exempted or ejected by the people. Similarly the buoyancy coefficients of own tax revenue, taxes on sales and trade, State excise duty, Taxes on vehicles, Stamp and registration duty, Land revenue, Taxes on income and expenditure, union excise duty and taxes on goods and passengers is 0.61 percent, 0.80 percent, 0.60 percent, 0.20 percent, 0.86 percent, 0.04 percent, 0.80 percent, 0.44 percent and 0.91 percent respectively all these taxes are significant at 5% significance level with a good R^2 of 0.94, 0.91, 0.90, 0.79, 0.85, 0.96, 0.64, 0.95, 0.96 and 0.97 respectively. But the degree of responsiveness or buoyancy coefficient of all the major taxes are less than unity except other taxes because of the combination of many taxes as already mentioned. The taxes on sales and trade also

includes VAT and GST which is main contributor to the state's own tax revenue increases by 0.80 percent with the increase of 1 percent in the state's income with R^2 of 90 percent. It is due to the low investment environment in J&K especially up to 2004-05, which hinders the industrial base of J&K state and in order to establish industrial base and investment environment; the state also provides many tax holidays and tax exemptions.

The J&K's own tax revenue also depicts the same image; however, the results are noteworthy but the tax buoyancy value is 0.61 percent which infers that 1 percent growth in state GDP will lead to 0.61 percent growth in own tax revenue of the J&K state. The buoyancy value of the state excise duty is 0.60 which indicates that the state excise duty is not responsive to the GSDP of the state, because 1 percent increase in the state's income leads to the 0.60 percent increase in the state excise duty. It is due to the lower consumption of liquor in J&K state is due to the ban under Islamic rules and regulations as the state has a majority of Muslim population, so there is lower consumption of these things. The buoyancy coefficient of the taxes on vehicles is 0.20 percent means that 1 percent increase in GSDP of the J&K state leads to the 0.20 percent increase on the taxes on vehicles. Stamp and registration duty also has low responsiveness to State's income with the buoyancy coefficient of 0.86, likewise Taxes on income and expenditure has 0.80 percent, taxes on goods and passengers have a buoyancy coefficient of 0.91 percent due to the larger import of goods from outside, because the state was not able to produce due to prevailing insurgency and sickness of large industrial base thus larger number of goods were imported into the state. But land revenue is least responsive to the state's income with the buoyancy coefficient of only 0.04 percent, which means 1 percent increase in GSDP leads to only 0.04 increase in land revenue of the state.

The less sensitiveness of land revenue to the GSDP of the state is due to the turmoil or insurgency period, the land revenue evasion was normal in the state coupled with inappropriate staff and organisation, the land revenue gathering remains very low. The taxes on income and expenditure have a buoyancy coefficient of 0.80 with R^2 95 percent means that 1 percent increase in GSDP of the state leads to the 0.80 percent increase in income and expenditure tax. The taxes on income and expenditure are not that much responsive to the state's income due to income tax exemptions in the state and only few taxes are under income tax basket and remaining taxes are either exempted or ejected by people. Union excise duty also have low buoyancy coefficient of 0.44 which infers that 1 percent increase in GSDP leads to the 0.44 per cent increase in the union excise tax. The lower buoyancy of union excise duty is due the increasing insurgency in the state, which has reduced the production of

certain goods in the state particularly in Kashmir division, and also excise duties are subsumed into the GST, but excise duty is still levied on certain items like petroleum and liquor.

CONCLUSION

From the foregoing, it can be concluded that the tax structure of Jammu and Kashmir is not buoyant at all. The tax system of J&K state is very worrying and poor. The low buoyancy of taxes in the state of J&K can be widely explained through numerous factors like large scale of tax exemption in the state in order to develop the state's infrastructure and economy. Also, due to heavy tax incentives and tax holidays given to industrial units in order to encourage business habit in the state as the business sector in the state is not performing well. The slow growth of agricultural sector over the years and exemption of agricultural related taxes also lead to heavy burden on growth of taxes with respect to income. Most importantly, a large portion of the economy is not taxable due to various adverse economic factors in the state. The tax revenue is only contributing 22.17 percent to total revenue of the state. The rate of growth of taxes is also very low to contribute the rising need of growing expenditure. Though the state's tax-income ratio is positive, but at the same time the insignificant tax base, lower progress of taxes, worsening taxes, low tax rates, immature economic nature, huge tax exclusions, larger subsidies, small taxable commodities, weak manufacturing units in J&K state etc are features as well as reason of deprived tax system of J&K state. The exemption of numerous taxes from tax system of the J&K over a lengthy period has also made tax construction very unfortunate and incompetent. The buoyancy of taxes has persisted below 1 which obviously demonstrates that the tax proceeds of J&K state is less sensitive to change in GSDP or state's income. The lower buoyancy of state's tax proceeds in terms of income shows that the tax system is not progressive in nature because the progressive tax classification always has higher buoyancy level. The tax revenue in J&K state is not able to fund the rising expenditure burden in J&K. The tax share from centre constitutes more than 50% percent of total tax revenue of the state and rest by own tax revenue. The poor performance of the tax income structure of J&K State is also due to different fiscal policy tools.

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