Evaluating the Revenue Productivity for State Governments of India

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Abstract: The paper examines the productivity of Indian tax policy by estimating tax buoyancy and tax elasticity with the help of a log regression model, for various taxes of state governments during 1990-91 to 2015-16. The paper also compares the value of tax buoyancy and tax elasticity for different time lag of economic reforms. The economic reforms have brought a paradigm shift in the economic policies of the government, as a part of it structural changes have been done in tax policy which has affected the revenue of government. The core objective of the paper is to assess the tax policy on the bases of revenue productivity.

Keyword: Government Policy, Tax Efficiency, Direct Tax, Indirect Tax

JEL Classification: G18, H21, H24, H25

I. Introduction: A sound public finance is a precondition for the development of and nation and tax policy is an integral part of it. It is often said that history of country is determined by its fiscal history (Shumpeter, 1954). Indian economy has about seven decades experience of shaping economic policy, during the economy has observed many structural changes. For initial four decades the economy has experienced state controlled regime and socialistic approach, that has been replaced by liberalized and open economy for last twenty seven years.

The study talks about the effects of tax policies on tax elasticity and tax buoyancy. The study covers the tax revenue of State governments for estimation of tax elasticity and tax buoyancy during 1990-91 to 2015-16.

The increase in revenue from any tax can be divided into two parts; one is the increase in revenue due to response to increase in national income, the other being the increase in revenue due to changes in the variables, other than national income, which influence the tax revenue, the most important being the discretionary changes in the tax rates or the tax base. The responsiveness of the tax revenue to changes in national income without any change in all the other factors which influence tax revenue is termed as elasticity. The responsiveness of the tax revenue to changes in national income taking into account the change in the tax revenue due to all the factors which influence it is referred to as buoyancy. There are three possibilities, tax buoyancy is equal to tax elasticity that meant discriminatory changes have not affected tax revenue, tax buoyancy is greater than tax elasticity that indicates discriminatory changes have positive effect on the revenue and tax buoyancy is less than tax elasticity indicates the discriminatory changes have negative effect on the revenue (Shota, 1961).

The discretionary tax measures can be broadly defined as any legislative or administrative change in policy that has an impact on tax revenues, whether it is already finally adopted or only likely to be implemented (Princen, Mourre, Paternoster, & Isbasoiu, 2013).

II. Review of Literature:

A cross-country examination of thirty five developing countries' tax buoyancy value (Qazi, 1994) indicates in ranking of buoyancy value Indonesia stood first, Ghana is second, Singapore placed at fourth, Sri Lanka is thirteenth, India is twenty sixth and Pakistan is at thirty positions.

Tax buoyancy (Jenkins, Kuo, & Shukla, 2000) measures total response of tax revenue to change in national income, the total response includes both increase in income and discretionary changes like change in tax base, change in tax rate etc. The responsiveness of tax revenue to the discretionary change in the tax rate and tax base in relation to GDP is termed as buoyancy of tax. The tax revenue purely measures response of tax revenue to the change in national income.

An article (Bhalla, 2004) indicated from the study of Indian tax revenue data from 1988 to 2004, that the tax cuts were resulted in increase in revenue. So the tax reform initiatives, including both reduction of tax rates and removal of exemptions, would lead to a significant increase in direct tax revenues.

A taskforce (Shah, 2004) under the chairmanship of Dr. Vijay Kelkar made some significant recommendation for improvement in existing tax structure to reduce litigation, simplify procedure and productive. The taskforce observed that the tax incentives are inefficient, iniquitous, high tax compliance cost and add administrative burden. The taskforce advocates lower tax rates, few slabs, a broad base, few exemptions, few incentives, few surcharges and few temporary measures.

The IMF working paper (Poirson, 2006) observed that the Indian tax system is characterized by a high dependence on indirect taxes, low average effective tax rates with low productivity and high marginal effective tax rates that distorts the investment and financing decisions during 1974 to 2004.

A research paper which has used double log regression model (M. & Upender, 2008) to find different coefficient of tax for India during 1950-51 to 2004-05. During pre-reform era the tax buoyancy was just more than unity and in post-reforms era it is less than unity.

An IMF working paper which has examined and compared the tax buoyancy (Dudine & Jalles, 2017) for one hundred and seven countries includes advance, emerged and low-income countries for the period of 1980 to 2014, found that long-run buoyancy of total revenue is not different from one in all country groups whereas short run buoyancy in advanced nation is less than one and in emerging and less developed nation it is more than one. Specifically for India, the long run tax buoyancy is 1.104 and the short run tax buoyancy is 1.668.

III. Research Methodology:

3.1: Area of Study: The study has analyzed data of Indian Public Finance, specially related to tax revenue during 1990-91 to 2015-16. Tax revenue is composition of direct tax and indirect tax, whereas direct tax includes corporate tax and personal income tax, and indirect tax is composition of Sales tax, Service tax, Custom duty, Excise duty etc. Apart from this the study examines data of Gross Domestic Product (GDP).

3.2: Sources of Data: The major sources of data are series of Indian Public Finance Statistics from 1990-91 to 2015-16 which is published by Indian Finance Ministry. The study has also uses Handbook of Statistics on Indian Economy for 2015-16 which is published by Reserve Bank of India.

3.3: Objective of Study: The study has following objectives;

1) To estimate the tax buoyancy and tax elasticity of various taxes of state government

2) To compare the tax buoyancy and tax elasticity of various taxes of state government

3.4: Model of Study: The Study has used log regression Model to measure elasticity and Buoyancy of various taxes through regression analysis.

$$\text{Log (TR)} = \alpha + \beta_1 . \text{Log (TB)} + \epsilon$$

Where, TR = Tax Revenue, TB = Tax Base and β_1 = tax elasticity/buoyancy

3.5: Descriptions of Variables: Major variables of study are, (1) Stater Government's Total Tax Revenue (STTR), (2) Direct Tax (DIR), (3) Indirect Tax (IDT), (4) Personal Income Tax (PIT), (5) Corporate Tax (CORP), (6) Excise Duty (EXDU), (7) Custom Duty (CUST), (8) Sales Tax (SALES), Service Tax (SERV), (9) Gross Domestic Product at factor price (GDP), (10) Non-Agriculture GDP (NAGDP), (11) Private Consumption expenditure (PCE)

3.6: Base for Regression analysis: The model will measure tax elasticity and tax buoyancy for various taxes. The give table displays various bases for calculation of value of co-efficient.

Table 1: Base selected for Tax Elasticity and Tax Buoyancy of particular Tax

For particular tax	Base for Regression for (Tax Elasticity)	Base for Regression for (Tax buoyancy)
Total tax revenue	GDP	NAGDP
Direct tax revenue	GDP	NAGDP
Income tax	GDP	NAGDP
Custom Duty	GDP	GDPIE
Excise duty	GDP	PEC
Sales tax	GDP	PEC

IV. Analysis and Findings:

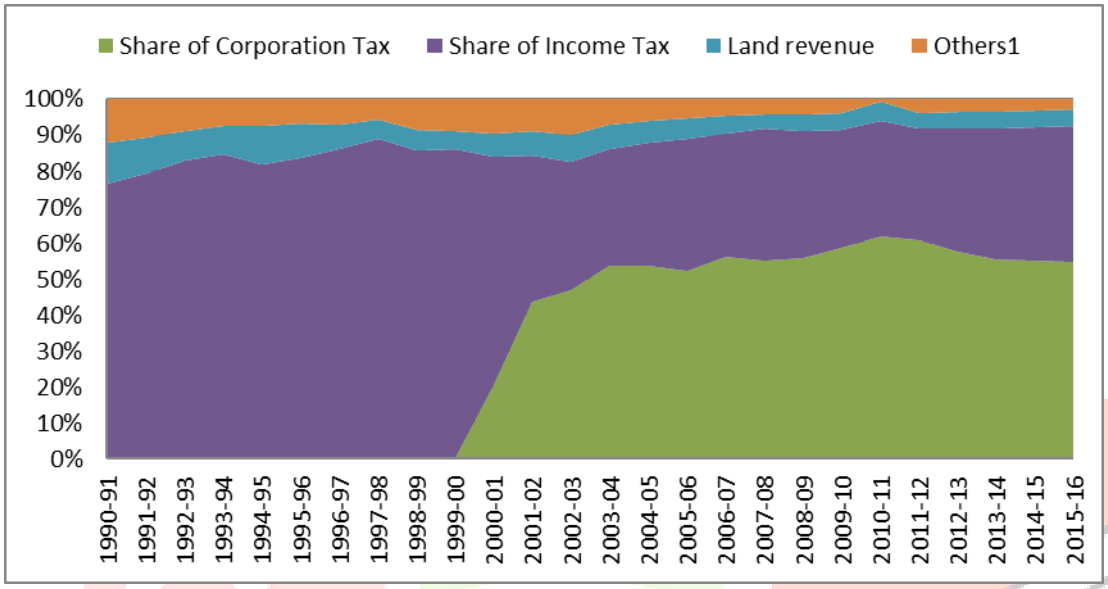
4.1: Composition of tax revenue for State Government

4.1.1: Composition of Direct tax revenue for State Government

From the year of 2000-01, states have started receiving share from corporate tax and it was 20.39% of direct tax which became highest 61.84% in 2010-11 and in the year 2015-16 it remained 55.70%. In 1990-91 states have received 76.52% of direct tax as share from income tax which was 86.21% in 1999-2000, than after it gradually declined and remains 36.40% in 2015-16.

For the state governments there was lack of sources as direct tax, so majorly the state government receives share from government from corporate and income tax. In the first decade of study period states have not received share in form of corporate taxes, during the same period the states have received 83.58% of their direct taxes from income tax. During 2000-01 to 2015-16 states are given 52.66% of their direct tax revenue as a share from corporation tax and states have received 36.75% of their direct tax revenue as a share from income tax. During 1990-91 to 2015-16, states have received 31.60% of direct tax from corporate tax and 55.48% of direct tax from income tax, whereas during the same period Land revenue and other sources contributes average 6 to 8% as revenue for direct tax.

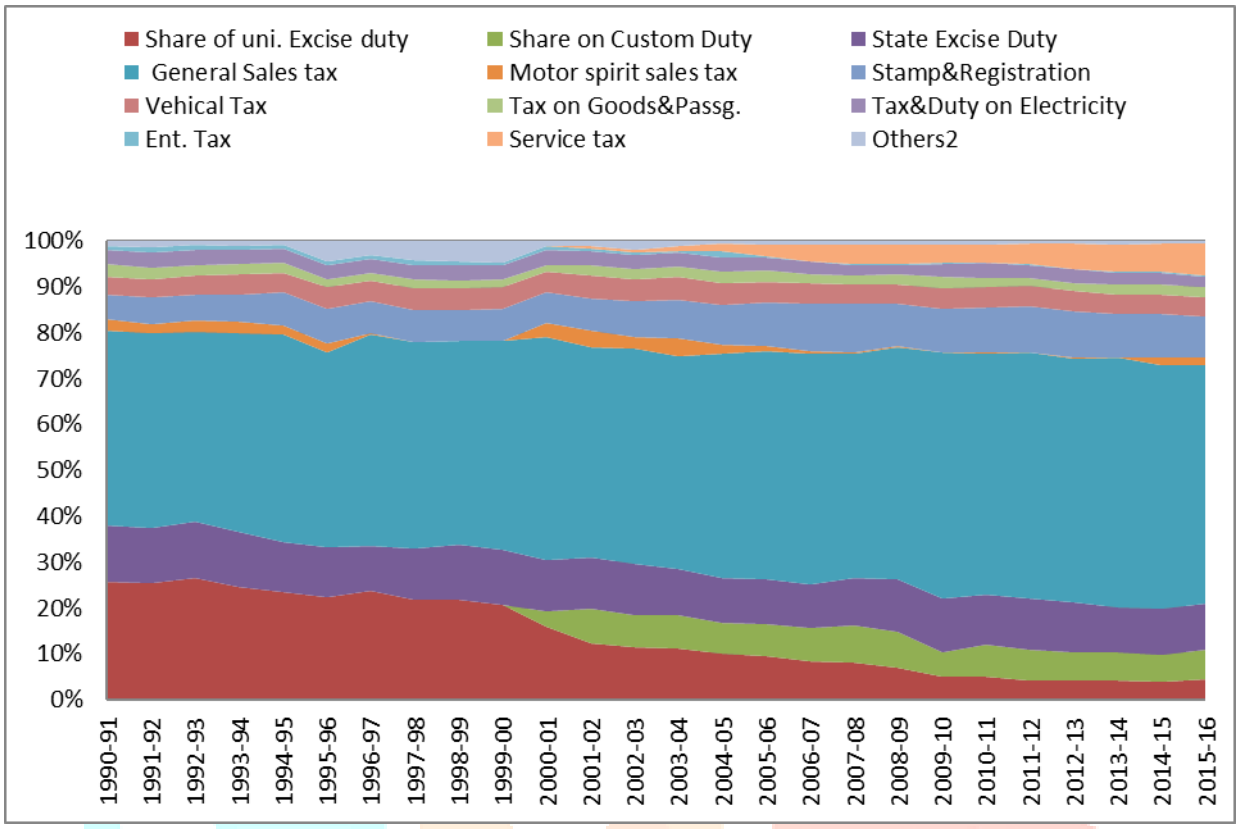
Figure 1: Composition of Direct taxes for State Governments



4.1.2: Composition of Indirect tax revenue for State Government

In the last decade of the twenty centaury Centre government share excise duty as total 20 to 25% indirect tax revenue for states, it has continuously declined and remained just 4% in 2015-16. From 2000-01 Centre government started giving share from custom duty to sates which remained 5 to 7% during fifteen years. State has steadily received 9 to 12 % from state excise duty during 25 years of study period. During the whole study period general sales tax remained largest source of indirect tax for state, and in 1990-91 it contributed 42.27% to states as indirect tax revenue which remained 52.90% in 2015-16. In initial decade of study period stamp and registration fees contributed 5-6% to the indirect revenue source for state which gradually became 10% at the end of study period. Apart from this there were other taxes like motor- spirit tax, vehicle tax, tax on goods and passengers transport, duty on electricity, entertainment tax and others contributed 2 to 5% during the study period.

Figure 2: Composition of Indirect taxes for State governments



4.2: Estimation of TE and TB for State Government's Tax Revenue:

4.2.1: Estimation of TE and TB for State during 1990-91 to 2015-16:

(1) Ln CTTR = 1.606352 + 1.039982 Ln GDP

(7.47) (49.55)

Duration = 1990-91 to 2015-16, R^2 = 0.99, P-Value = 0.000 and DW = 0.6002

(2) Ln CTTR = 2.429734 + 0.983691 Ln NAGDP

(12.63) (51.09)

Duration = 1990-91 to 2015-16, R^2 = 0.99, P-Value = 0.000 and DW = 0.6095

(3) Ln SDT = -2.364048 + 1.265074 Ln GDP

(-9.55) (52.32)

Duration = 1990-91 to 2015-16, R^2 = 0.99 P-Value = 0.000 and DW = 0.087

(4) Ln SDT = -1.351075 + 1.195455 Ln NAGDP

(-5.50) (48.70)

Duration = 1990-91to 2015-16, R^2 = 0.98, P-Value = 0.000 and DW = 0.772

(5) Ln SIDT = 1.443769 + 1.056142 Ln GDP

(10.40) (77.90)

Duration = 1990-91to 2015-16, R^2 = 0.99 P-Value = 0.000 and DW = 0.434

(6) Ln SIDT = 1.105301 + 1.133910 Ln PCE

(7.89) (79.59)

Duration = 1990-91to 2015-16, R^2 = 0.99, P-Value = 0.000 and DW = 0.437

(7) Ln SEDU = -0.327173 + 1.012455 Ln GDP

(-0.33) (61.83)

Duration = 1990-91to 2015-16, R^2 = 0.99, P-Value = 0.000 and DW = 0.613

(8) Ln SEDU = -0.650586 + 1.086899 Ln PEC

(-3.75) (61.66)

Duration = 1990-91to 2015-16, R^2 = 0.99, P-Value = 0.000 and DW = 0.661

(9) Ln SSALES = -0.155848 + 1.140636 Ln GDP

(-1.08) (81.13)

Duration = 1990-91to 2015-16, R^2 = 0.99, P-Value = 0.000 and DW = 0.721

(10) Ln SSALES = -0.516936 + 1.224171 Ln PEC

(-3.23) (75.35)

Duration = 1990-91 to 2015-16, R^2 = 0.99, P-Value = 0.000 and DW = 0.633

4.2.2: Estimation of TE and TB for State during 1990-91 to 1999-2000:

(1) Ln CTTR = 3.434636 + 0.841105 Ln GDP

(7.85) (17.76)

Duration = 1990-91 to 1999-2000, R^2 = 0.97, P-Value = 0.000 and DW = 1.8098

(2) Ln CTTR = 4.058037+ 0.801328 Ln NAGDP

(10.55) (18.57)

Duration = 1990-91 to 1999-2000, R^2 = 0.97, P-Value = 0.000 and DW = 0.8868

(3) Ln SDT = -1.271337 + 1.150288 Ln GDP

(-2.10) (17.52)

Duration = 1990-91 to 1999-2000, R^2 = 0.97 P-Value = 0.000 and DW = 2.061

(4) Ln SDT = -0.406892 + 1.094555 Ln NAGDP

(-0.73) (17.42)

Duration = 1990-91 to 1999-2000, R^2 = 0.97 P-Value = 0.000 and DW = 1.879

(5) Ln SIDT = 2.777079 + 0.911961 Ln GDP

(21.53) (65.30)

Duration = 1990-91 to 1999-2000, R^2 = 0.99 P-Value = 0.000 and DW = 2.134

(6) Ln SIDT = 2.618495 + 0.963463 Ln PCE

(17.42) (57.07)

Duration = 1990-91 to 1999-2000, R^2 = 0.99 P-Value = 0.000 and DW = 1.480

(7) Ln SEDU = 1.073774 + 0.862044 Ln GDP

(2.21) (16.41)

Duration = 1990-91 to 1999-2000, R^2 = 0.97 P-Value = 0.000 and DW = 1.160

(8) Ln SEDU = 0.918706 + 0.911308 Ln PEC

(3.94) (16.83)

Duration = 1990-91 to 1999-2000, R^2 = 0.97, P-Value = 0.000 and DW = 1.336

(9) Ln SSALES = 1.361193 + 0.976084 Ln GDP

(5.66) (37.38)

Duration = 1990-91 to 1999-2000, R^2 = 0.99, P-Value = 0.000 and DW = 2.822

(10) Ln SSALES = 1.187566 + 1.031645 Ln PEC

(4.95) (38.30)

Duration = 1990-91 to 1999-2000, R^2 = 0.99, P-Value = 0.000 and DW = 1.292

4.2.3: Estimation of TE and TB for State during 2000-01 to 2010-2011:

(1) Ln CTTR = 0.099931 + 1.184332 Ln GDP

(0.13) (15.59)

Duration = 2000-01 to 2010-2011, R^2 = 0.96, P-Value = 0.000 and DW = 0.8081

(2) Ln CTTR = 0.896576 + 1.131889 Ln NAGDP

(1.32) (17.05)

Duration = 2000-01 to 2010-2011, R^2 = 0.96, P-Value = 0.000 and DW = 0.8892

(3) Ln SDT = -5.031514 + 1.515599 Ln GDP

(-8.45) (26.71)

Duration = 2000-01 to 2010-11, R^2 = 0.98 P-Value = 0.000 and DW = 1.710

(4) Ln SDT = -3.973623 + 1.444742 Ln NAGDP

(7.36) (27.49)

Duration = 2000-01 to 2010-11, R^2 = 0.98, P-Value = 0.000 and DW = 2.105

(5) Ln SIDT = 1.814201 + 1.017789 Ln GDP

(4.86) (28.59)

Duration = 2000-01 to 2010-11, R^2 = 0.98 P-Value = 0.000 and DW = 0.893

(6) Ln SIDT = 0.786426 + 1.166166 Ln PCE

(1.43) (21.81)

Duration = 2000-01 to 2010-11, R^2 = 0.98, P-Value = 0.000 and DW = 0.640

(7) Ln SEDU = -0.749821 + 1.048680 Ln GDP

(-2.85) (41.81)

Duration = 2000-01 to 2010-11, R^2 = 0.99 P-Value = 0.000 and DW = 0.897

(8) Ln SEDU = -1.893580 + 1.208156 Ln PEC

(-10.52) (67.44)

Duration = 2000-01 to 2010-11, R^2 = 0.99, P-Value = 0.000 and DW = 2.050

(9) Ln SSALES = 0.092815 + 1.114497 Ln GDP

(0.22) (22.08)

Duration = 2000-01 to 2010-11, R^2 = 0.98, P-Value = 0.000 and DW = 1.134

(10) Ln SSALES = -1.051379 + 1.276876 Ln PEC

(-1.76) (21.50)

Duration = 2000-01 to 2010-11, R^2 = 0.98, P-Value = 0.000 and DW = 0.899

4.2.4: Estimation of TE and TB for State during 2010-11 to 2015-2016:

(1) Ln CTTR = 4.1440 + 0.819860 Ln GDP
(6.68) (15.25)

Duration = 2011-12 to 2015-16, R^2 = 0.99, P-Value = 0.006 and DW = 2.6484

(2) Ln CTTR = 4.689781 + 0.785981 Ln NAGDP
(7.79) (14.80)

Duration = 2011-12 to 2015-16, R^2 = 0.99, P-Value = 0.0007 and DW = 2.3494

(3) Ln SDT = -2.341557 + 1.265348 Ln GDP

(-0.65) (4.07)

Duration = 2011-12 to 2015-16, R^2 = 0.85 P-Value = 0.027 and DW = 1.524

(4) Ln SDT = -1.588524 + 1.220937 Ln NAGDP

(-0.49) (4.25)

Duration = 2011-12 to 2015-16, R^2 = 0.86, P-Value = 0.024 and DW = 1.548

(5) Ln SIDT = -0.530269 + 1.232817 Ln GDP

(-0.39) (10.39)

Duration = 2011-12 to 2015-16, R^2 = 0.97 P-Value = 0.002 and DW = 1.850

(6) Ln SIDT = 1.944824 + 1.061212 Ln PCE

(2.45) (14.78)

Duration = 2011-12 to 2015-16, R^2 = 0.98, P-Value = 0.001 and DW = 0.083

(7) Ln SEDU = 1.010616 + 0.902358 Ln GDP

(0.45) (4.65)

Duration = 2011-12 to 2015-16, R^2 = 0.87, P-Value = 0.019 and DW = 2.018

(8) Ln SEDU = 2.769630 + 0.781509 Ln PEC

(1.68) (5.23)

Duration = 2011-12 to 2015-16, R^2 = 0.90, P-Value = 0.014 and DW = 2.222

(9) Ln SSALES = -0.615310 + 1.185504 Ln GDP

(-0.70) (22.08)

Duration = 2011-12 to 2015-16, R^2 = 0.98, P-Value = 0.001 and DW = 2.079

(10) Ln SSALES = 1.788209 + 1.018368 Ln PEC

(5.23) (32.35)

Duration = 2011-12 to 2015-16, R^2 = 0.99, P-Value = 0.000 and DW = 2.230

Table 2: Tax Elasticity and Tax Buoyancy for various taxes of State government

Duration	TE of TTR	TB of TTR	TE of DT	TB of DT	TE of IDT	TB of IDT	TE of EDU	TB of EDU	TE of SALES	TB of SALES
1990-91 to 2015-16	1.09	1.03	1.27	1.20	1.06	1.13	1.02	1.08	1.14	1.22
1990-91 to 1999-2000	0.94	0.90	1.15	1.09	0.91	0.96	0.86	0.91	0.98	1.03
2000-01 to 2010-11	1.10	1.05	1.52	1.44	1.02	1.17	1.05	1.21	1.11	1.28
2011-12 to 2015-16	1.24	1.19	1.27	1.22	1.23	1.06	0.90	0.78	1.19	1.02

4.3: Major Findings of Study:

1. The major sources of direct tax revenue for states come through sharing of income tax and corporate tax from central government. The state governments have less productive sources of direct tax and it has dependency on central government.

2. The state governments have many indirect taxes for collecting tax revenue; the major source of revenue is sales tax which contributes 40-50% in indirect tax revenue.

3. The tax elasticity and tax buoyancy value for tax revenue has gradually increased with the progress of time, and tax buoyancy value is less than tax elasticity that indicated the discriminatory changes have created negative effects on revenue.

4. Compare to first decade of study, the value of tax elasticity and tax buoyancy for direct tax has increased during second decade of study. But in last five year of study the both values have been reduced.

5. For direct tax and excise duty the value of tax elasticity and tax buoyancy has marginally fall in last five years of study.

6. For total tax revenue and direct tax the discriminatory changes have created negative effects as tax buoyancy value is less than tax elasticity.

7. For excise duty, sales duty and whole indirect tax revenue tax buoyancy value is greater than tax elasticity which means the discretionary changes have created positive changes on revenue for such taxes.

V. Conclusion: For state government over all the tax policies have proved productive as both tax buoyancy and tax elasticity value has increased for total tax revenue, indirect tax and sales tax The most of values of tax elasticity and tax buoyancy for various taxes is either unitary or more than one, that indicates the tax policy of state and most of discretionary changes have been proved revenue productive. In future it is important to observe the effect of GST policy on the revenue productivity of state.

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