



Computation of Sales Tax Incidence

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Abstract: *The application of incidence theory to the taxation on sales has been complicated by a wide variety of institutional circumstances, surrounding this kind of tax. The burden of sales tax should not be assessed in isolation. The regressivity of sales tax is lessened if it is considered simultaneously with the benefit accrued from public expenditure. The incidence of benefits will depend on the pattern of investment. If priority is assigned to increasing the supply of wage-goods, the poorer sections can improve their economic position over time and the volume of employment can expand steadily. In this study, estimating of sales tax incidence in (Rajasthan, Madhya Pradesh, Uttar Pradesh, Punjab and Haryana) (2000-2010) have been discussed. The per capita incidence of sales tax in 2009-10 increased by 1.9 time in Rajasthan, by 3.1 time in Uttar Pradesh, by 2.5 time in Haryana, by 1.8 time in Punjab, by 1.4 time in Madhya Pradesh over 2000-01. Uttar Pradesh and Madhya Pradesh is in a poor position so far as per capita incidence of sales tax is concerned.*

Keywords:- *Sales tax incidence, population, total tax revenue, per capita sales tax revenue, net state domestic products, index number.*

Introduction

Incidence of taxation has a paramount importance in our economy. Various methods may be used to find out tax incidence, but the most simple method of measuring it is to divide the tax revenue in a particular year by the estimated population of that year. This, however, gives only a partial picture of tax incidence of the states, because it does not relate to the per capita income or expenditure. Even if the rates of the tax and level of administrative efficiency are the same in the different states, the per capita sales tax would differ, if income levels or tax base and size of the population vary. In this method population cannot be divided in various income groups on the basis of their income slabs and the tax incidence thereon cannot be calculated. The only possible method to estimate tax incidence is to divide the tax revenue by population. If the per capita incidence is increased in spite of increase in population, it denotes an increase in the consumption of such goods and services which are subject to sales tax. Therefore, per capita sales tax incidence would serve only as a broad indicator of the levels of sales tax incidence.

Review of earlier study

The first systematic attempt to measure tax incidence was made by the Taxation Inquiry commission (1953-54)¹.

It measured the tax burden by using the household consumer expenditure data furnished by National Sample Survey in its 4th round. The burden was expressed by certain household expenditure classes. Later, two more attempts were made by the Ministry of Finance² to measure the incidence of indirect taxes for 1958-59 and 1963-64 on the basis of same methodology. In this direction, National Institute of Public Finance, New Delhi has attempted to estimate the incidence of taxation by National Sample Survey expenditure groups for the year 1973-74³. In these studies, revenue collected from the tax on each commodity or base is allocated to various National Sample Survey expenditure groups on the basis of the proportionate consumption or use of that particular commodity or base in each group in rural and urban sectors.

National Council of Applied Economics Research in its studies of the State of Gujrat (1970)⁴ and Mysore (1972)⁵ undertook full surveys of family budgets, specially designed to serve the objective of estimating the tax incidence on various income group in both rural and urban areas of Mysore.

The Taxation and Inquiry Commission, Uttar Pradesh (1974)⁶ attempted to calculate the tax incidence in different income expenditure group in rural and urban groups. The committee adopted in totally the methodology used by Taxation Inquiry commission (1953-54) and Tax Research unit for the allocation of the state indirect taxes directly on the basis of the tax payment revealed by the survey schedules.

The study of Chandra Sekhar⁷, calculated inter-state disparities in the burden of state taxes as whole (13 states) and in particular of land revenue and general sales tax (in 1960-61 and 1965-66) and expressed the tax burden in the terms of state incomes.

Mr. B.P. Goswami⁸ studies 17 states of India for the period of 1962-63 and 1969-70 and analyzed the total burden and sales tax burden in terms of state income.

Mr. M.C. Purohit's⁹ study presents the estimates of the incidence of sales tax usual capital of Rajasthan by using the usual assumption that the tax is borne by the consumers according to their expenditure on taxes commodities. The study suggests that there is regressively up to the income group Rs. 301-500, but progressivity is also witnessed in the income group higher than that.



Dr. Girish K. Srivastava¹⁰ had studied incidence of commercial taxes of five states (Rajasthan, Uttar Pradesh, Madhya Pradesh, Punjab and Bihar) from the period 1961-72. He calculated per capita incidence in terms of population and state income and found that in Punjab, the per capita incidence is the highest in comparison to other states.

Professor Vito Tanzi¹¹ in his article “International Tax Burden” has defined the tax burden as the ratio of tax revenue to the part of national income which is above the subsistence level so it is:

$$E = \frac{T}{Y.S}$$

Where:

E = Burden, T = tax revenue, Y = national income, and S = that part of national income required

Tom provides a defined substance standard of living to the population. But for the purpose of this formula, it is not collect the data regarding income at the subsistence level in the states.

Mr. V.P. Gandhi¹² (1966) attempted to study the incidence of direct and indirect taxes in agriculture, on the basis of the net or fiscal tax burden. The burden taking in to consideration the benefits of the public expenditure. He also suggested the following formula to measure tax incidence:

$$B_2 = \frac{t}{f(Y - S, W, w, i)e}$$

Where B_2 = tax incidence, t = per capita tax paid, y = per capita income, S = per capital subsistence required, W = per capita wealth, w = wealth inequality measure, I = income inequality measure, e = a constant denoting the desired degree of progressivity and f = function.

Gandhi’s estimates, however, do not appear to have made much headway on account of the great dearth of statistical data relating to such variables as per capita subsistence, requirement, per capita wealth, wealth and income inequality, included in his measure of incidence. The absence of reliable data has forced him to make some assumption, such as $e = 1.5$, about the number of variables.

Pro. D.T. Lakdawala and K.V. Nambiar¹³ (1972) has studied commodity wise incidence of sales tax of three states (Kerla, Tamilnadu and Gujrat). He calculated commodity wise per capita incidence in term of revenue commodity wise and projected population and observed that the per capita revenue is much higher for food items in under study states.

Objectives: -

In this study, estimating of sales tax incidence in (Rajasthan, Madhya Pradesh, Uttar Pradesh, Punjab and Haryana) (2000-2010) have been discussed.

1. With the knowledge of tax incidence, implementation of different taxes and their purpose can be fulfilled.
2. With the mode of tax, income and properties can be distributed properly in states, but it is possible only when there is equal distribution of tax incidence. Without this target cannot be completed.
3. By taxation, inflation and deflation can be stopped & controlled.
4. By estimation of tax incidence, we can some to know that who is really paying the tax so that we can change the taxation policy accordingly.
5. By knowing the actual tax payer, government can provide economic subsidy when needed.

Hypothesis: -

By estimation and comparative study of sales tax incidence in (Rajasthan, Madhya Pradesh, Uttar Pradesh, Punjab and Haryana). We can make tax system to suitable and profitable, which is necessary for sustain growth and development of states. By proper distribution of sales tax incidence (independent variable), state tax revenue (depend variable) can be increased which is necessary for independent of states.

Methodology: -

The present study aims act computing money burden of sales tax. There will be used for per capita sales tax incidence through population.

For per capita tax incidence, the following formula can be used: -

$$I = \frac{T}{P}$$

In which I stands for tax incidence, T stands for particular tax revenue in particular year, P stands for population in particular year.

The population figure if different states (Rajasthan, Madhya Pradesh, Uttar Pradesh, Punjab and Haryana) has been estimated by using different decennial compound growth rates pertaining to the census of 2000 was applied. The growth rate per year has been calculated on the basis of extrapolation formula:

$$r = \sqrt[n]{\frac{P_n}{P_0}} - 1 \text{ in which}$$

R stands for rate of growth, n for number of year intervening, P_n for year at the end and P_0 for year of start.

Computing of sales tax incidence

Per Capital Sales Tax Incidence
RAJASTHAN

Year	Sales tax revenue (Rs. in crores)	Population (in crores)	Per capita incidence (in Rs.)	Index number of per capita incidence (Base 2000-01)
2000-01	2821	5.6501	499.28	100.00
2001-02	3069	5.7952	529.58	106.07 (+6.07)
2002-03	3438	5.9750	575.40	115.25 (+8.65)
2003-04	3985	6.0274	661.15	132.42 (+14.9)
2004-05	4798	6.1525	779.85	156.19 (+17.95)
2005-06	5594	6.2661	892.74	178.81 (+14.48)
2006-07	6721	6.3789	1053.63	211.03 (+18.02)
2007-08	7751	6.4914	1194.04	239.15 (+13.33)
2008-09	9100	6.6026	1378.24	276.05 (+15.43)
2009-10	10030	6.7121	1494.32	299.29 (+8.42)

❖ Sales tax revenue includes state sales tax, central sales tax, motor spirit tax and purchase tax on sugarcane.

❖ Population has been calculated on the basis of interpolation extrapolation formula.

Figure in brackets shows percentage change over previous year.

Source: - (i) Revenue figure has been comprised by Reserve Bank of India Bulletins.

(ii) Population figures of 2000-01 has been compiled from statistical abstract, Directorate of Economics and Statistics, Rajasthan and other year's population has been calculated on the basis of interpolation extrapolation formula.

It reveals that in **Rajasthan** the per capita incidence of sales tax has shown a rising trend throughout the period of study. It went up from Rs 499.28 in 2000-01 to Rs 1494.32 in 2009-10 i.e. an increase of 199.3 percent. Index number of per capita sales tax incidence also showed an increasing trend. It increased by 6.07 percent in 2001-02 over the year 2000-01. After that it registered a rise in the succeeding four years by 8.65 percent, by 14.9 percent, by 17.95 percent and by 14.48 percent over the respective previous year. It increased very sharply by 18.02 percent in 2006-07 and finally by 8.42 percent in 2009-10.

Per Capital Sales Tax Incidence
UTTAR PRADESH

Year	Sales tax revenue (Rs. in crores)	Population (in crores)	Per capita incidence (in Rs.)	Index number of per capita incidence (Base 2000-01)
2000-01	6118	16.6198	368.12	100.00
2001-02	6163	17.2158	357.99	97.25 (+2.75)
2002-03	7124	17.8250	399.66	108.57 (+11.64)
2003-04	7684	17.9807	427.36	116.09 (+6.93)
2004-05	8888	18.6190	491.08	133.40 (+14.91)
2005-06	11285	18.4449	611.82	166.20 (+24.59)
2006-07	13279	18.7928	706.60	191.95 (+15.49)
2007-08	15023	19.1434	784.76	213.18 (+11.06)
2008-09	17178	19.4948	881.16	239.37 (+12.29)

2009-10	20741	19.8455	1045.12	283.91 (+18.61)
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❖ Sales tax revenue includes state sales tax, central sales tax, motor spirit tax and purchase tax on sugarcane.

❖ Population has been calculated on the basis of interpolation extrapolation formula.

Figure in brackets shows percentage change over previous year.

Source: - (i) Revenue figure has been comprised by Reserve Bank of India Bulletins.

(ii) Population figures of 2000-01 has been compiled from statistical abstract, Directorate of Economics and Statistics, Rajasthan and other year's population has been calculated on the basis of interpolation extrapolation formula.

In **Uttar Pradesh** the per capita incidence of sales tax amounted to Rs 368.12 in 2000-01 which increased to Rs 1045.12 in 2009-10. It marked a steady growth and increased to Rs 357.99 in 2001-02, to Rs 427.36 in 2003-04, to Rs 611.82 in 2005-06 and reached a phenomenal height of 881.16 in 2008-09 and finally Rs 1045.12 in 2009-10. This high growth reflects that during the last three years of the study the sales tax revenue has increased considerably. The per capita incidence increased by 183.91 percent in 2009-10 over 2000-01. The index number of per capita sales tax incidence increased by 2.75 percent in 2001-02. It has shown an increasing trend throughout the period of study but the year 2005-06 witnessed a sharp rise 24.59 percent over the previous year.

Per Capital Sales Tax Incidence

HARYANA

Year	Sales tax revenue (Rs. in crores)	Population (in crores)	Per capita incidence (in Rs.)	Index number of per capita incidence (Base 2000-01)
2000-01	2573	2.1145	1216.84	100.00
2001-02	2945	2.1654	1360.03	111.77 (+11.77)
2002-03	3337	2.2058	1512.81	124.32 (+11.23)
2003-04	3838	2.2847	1679.87	138.05 (+11.04)
2004-05	4761	2.3029	2067.39	169.90 (+23.07)
2005-06	5604	2.3460	2388.75	196.31 (+15.54)
2006-07	6853	2.3888	2868.80	235.76 (+20.1)
2007-08	7721	2.4316	3175.28	260.94 (+10.68)
2008-09	9785	2.4741	3954.97	325.02 (+24.56)
2009-10	10740	2.5163	4268.17	350.76 (+7.92)

❖ Sales tax revenue includes state sales tax, central sales tax, motor spirit tax and purchase tax on sugarcane.

❖ Population has been calculated on the basis of interpolation extrapolation formula.

Figure in brackets shows percentage change over previous year.

Source: - (i) Revenue figure has been comprised by Reserve Bank of India Bulletins.

(ii) Population figures of 2000-01 has been compiled from statistical abstract, Directorate of Economics and Statistics, Rajasthan and other year's population has been calculated on the basis of interpolation extrapolation formula.

In **Haryana** the per capita sales tax incidence increased from Rs 1216.84 in 2000-01 to Rs 4268.17 in 2009-10 marking an increase of 250.76 percent. The index number of per capita sales tax incidence increased by 11.77 percent in 2001-02, by 11.23 percent in 2002-03, by 11.04 percent in 2003-04, by 23.07 percent in 2004-05, by 15.54 percent in 2005-06, by 20.1 percent in 2006-07, by 10.68 percent in 2007-08, by 24.56 percent in 2008-09 and finally by 7.92 percent in 2009-10 over the respective previous year. The higher incidence indicates that in Haryana, sales tax mobilized properly in view of sales tax and trade activities which increased much faster than in Rajasthan and Uttar Pradesh.

Per Capital Sales Tax Incidence

PUNJAB

Year	Sales tax revenue (Rs. in crores)	Population (in crores)	Per capita incidence (in Rs.)	Index number of per capita incidence (Base 2000-01)
2000-01	2649	2.4359	1085.43	100.00



2001-02	2684	2.4497	1095.64	100.94 (+0.94)
2002-03	3072	2.4984	1229.59	113.88 (+12.82)
2003-04	3308	2.5054	1320.35	121.64 (+6.81)
2004-05	3816	2.5839	1476.84	136.06 (+11.85)
2005-06	4627	2.6172	1767.92	162.87 (+19.7)
2006-07	4829	2.6503	1822.06	167.86 (+3.06)
2007-08	5343	2.6833	1991.20	183.45 (+9.31)
2008-09	6530	2.7158	2404.45	221.52 (+20.72)
2009-10	8320	2.7475	3028.21	278.99 (+25.94)

❖ Sales tax revenue includes state sales tax, central sales tax, motor spirit tax and purchase tax on sugarcane.

❖ Population has been calculated on the basis of interpolation extrapolation formula.

Figure in brackets shows percentage change over previous year.

Source: - (i) Revenue figure has been comprised by Reserve Bank of India Bulletins.

(ii) Population figures of 2000-01 has been compiled from statistical abstract, Directorate of Economics and Statistics, Rajasthan and other year's population has been calculated on the basis of interpolation extrapolation formula.

In Punjab the per capita incidence of sales tax increased from Rs 1085.43 in 2000-01 to Rs 3028.21 in 2009-10 marking an increase of 178.99 percent. The per capita incidence of index number showed a steady growth throughout the period of study. It increased by 0.94 percent in 2001-02, by 12.82 percent in 2002-03, by 6.81 percent in 2003-04, by 11.85 percent in 2004-05, by 19.7 percent in 2005-06, by 3.06 percent in 2006-07, by 9.31 percent in 2007-08, by 20.72 percent in 2008-09 and finally by 25.94 percent in 2009-10 over the respective previous year.

**Per Capital Sales Tax Incidence
MADHYA PRADESH**

Year	Sales tax revenue (Rs. in crores)	Population (in crores)	Per capita incidence (in Rs.)	Index number of per capita incidence (Base 2000-01)
2000-01	2767	6.0348	458.51	100.00
2001-02	2361	6.1854	381.71	83.25 (-16.75)
2002-03	2906	6.3092	460.60	100.46 (+20.67)
2003-04	3296	6.4147	513.82	112.06 (+11.95)
2004-05	5912	6.5605	901.15	196.54 (+75.39)
2005-06	4502	6.6791	674.04	147.01 (-25.20)
2006-07	5261	6.7967	774.05	168.82 (+14.84)
2007-08	6045	6.9131	874.43	190.11 (+12.97)
2008-09	6720	7.0288	956.07	208.52 (-9.3)
2009-10	8012	7.1439	1121.52	244.60 (+17.3)

❖ Sales tax revenue includes state sales tax, central sales tax, motor spirit tax and purchase tax on sugarcane.

❖ Population has been calculated on the basis of interpolation extrapolation formula.

Figure in brackets shows percentage change over previous year.

Source: - (i) Revenue figure has been comprised by Reserve Bank of India Bulletins.

(ii) Population figures of 2000-01 has been compiled from statistical abstract, Directorate of Economics and Statistics, Rajasthan and other year's population has been calculated on the basis of interpolation extrapolation formula.



In **Madhya Pradesh** the per capita incidence of sales tax increased from Rs 458.51 in 2000-01 to Rs 1121.52 in 2009-10 marking an increase of 144.60 percent. The per capita incidence of index number showed a steady growth throughout the period of study. It increased by 16.75 percent in 2001-02 and increased by 11.95 percent in 2002-03, by 75.39 percent in 2003-04, decreased by 25.20 percent in 2004-05, by increased 14.84 percent in 2005-06, by 12.93 percent in 2006-07 and finally by 17.3 percent in 2009-10 over the respective previous year.

As a whole, the states where population is not increasing faster, the per capita incidence of sales tax is higher. In this regard in Punjab and Haryana which are less population states and where the industrial and agricultural advancement is very fast, the per capita sales tax incidence was found being Rs 3028.21 and Rs 4268.17 respectively while in Uttar Pradesh, Madhya Pradesh and Rajasthan it was only Rs 1045.12 and Rs 1494.32 in 2009-10. In Madhya Pradesh and Uttar Pradesh the per capita sales tax incidence is very low in comparison to Haryana and Punjab. The per capita incidence of sales tax in 2009-10 increased by 1.9 time in Rajasthan, by 3.1 time in Uttar Pradesh, by 2.5 time in Haryana, by 1.8 time in Punjab, by 1.4 time in Madhya Pradesh over 2000-01. Uttar Pradesh and Madhya Pradesh is in a poor position so far as per capita incidence of sales tax is concerned.

Conclusion

The per capita incidence of sales tax is higher in Haryana followed by Punjab, Rajasthan, Madhya Pradesh and Uttar Pradesh, but the share of sales tax in state's net domestic products is negligible. The per capita incidence in a rupee varied between 3.7945 to 4.4999 paise in Rajasthan, 3.6603 to 5.1341 paise in Uttar Pradesh, 4.8077 to 5.9441 paise in Haryana, 3.7664 to 5.3734 paise in Punjab and 3.0456 to 6.1105 paise in Madhya Pradesh. It is higher in the industry developed states where per capita income is also higher. In Uttar Pradesh it is very meager.

Finally, it is hoped that the implementation of the above suggestions would go a long way towards toning up the administration of sales tax in the states under study. Besides this, it would also well up the volume of the revenue obtained through sales tax due to the removal of the legal and procedural flaws.

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