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Tax Performance of Indian States since the 1990s

R Mohan and D Shyjan

Gulati Institute of Finance and Taxation
Thiruvananthapuram, Kerala, India

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R Mohan
Honorary Fellow
Gulati Institute of Finance and Taxation

D Shyjan
Associate Professor of Economics
University of Calicut

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Thiruvananthapuram, Kerala

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Tax Performance of Indian States since the 1990s

Abstract

The study analyses the tax performance of 15 major States in India, using Own Tax Revenue (OTR) to Gross State Domestic Product (GSDP) ratio for the three decadal period-1990-91 to 2018-19. This period witnessed major policy shifts in commodity taxation, which is the major component of OTR of States. The study fiend that the OTR-GSDP ratio and growth rate of OTR of 15 major States have been converging. It is also seen that the OTR-GSDP ratio and the OTR growth rates of the lower income States have shown a rise, while that of the States with relatively higher income States witnessed a fall in the same. The association between per capita incomes and OTR-GSDP ratio have been negative and statistically significant, This aspect needs further analysis by including more explanatory variables.

General Backdrop

The focus of the study is the Own Tax Revenue (OTR) performance of 15 major States in India during 1990-91 to 2018-19. The main components of OTR of States are taxes on purchase and sale of goods [initially General Sales Tax, later Value Added Tax (VAT) and presently Goods and Services Tax (GST). which is levied on supply of goods and services on a common base and apportioned between the Union and the States)], Excise Duty on alcoholic liquor for human consumption, Motor Vehicle Tax, Stamp Duty and Registration fees and other taxes including Electricity Duty. Almost two-thirds of OTR comprises taxes on purchase and sale of goods and supply of services. Hence, we proceed to look at the reforms that took place in commodity taxation before analysing the trends in OTR of 15 major States in India.

2. **Taxes on Purchase and Sale of Goods- Major Policy Shifts**

Under the constitutional division of powers (till the 101st constitutional amendment[1]), States in India taxed purchase and sale of goods within their territorial jurisdiction and inter-state sales were covered under the Central Sales Tax (CST)[2] In the Sales Tax regime, there existed cascading of input taxes and multiplicity of rates and the States were taxing sale of commodities at their first point. Besides, Turnover tax was also

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[1] The 101st constitutional amendment brought in a comprehensive amendment by bringing taxation of goods and services under the umbrella of GST as a destination based tax. The State VAT, central Sales Tax, Union Excise Duties (except Petroleum products which will come under GST on the notification by the GST Council) and service tax were subsumed in GST with effect from July 1, 2017.

[2] CSTwas introduced in 1956 through the 6th constitutional amendment.

levied in some cases. NIPFP (1994), in a study led by Amaresh Bagchi, has commented as under:

"*With a narrow base the rates have to be high to raise the same amount of revenue. Finding it difficult to raise the level of sales taxes at the first point any further, the States are now resorting to additional levies like turnover tax already referred to, additional sales tax, surcharges and so on, making the system totally non-transparent and the tax incidence arbitrary and unpredictable. ….*

Driven by pressures to raise more and more revenue, most States have resorted to levies in the form of surcharges (SC), on the one hand and additional sales tax/turnover tax (TOT), etc., on the other. The surcharges are currently in operation in a majority of the bigger States, the base in some being the amount of general sales tax (GST) and in some, the total of both GST and TOT payable. The TOT in most cases is a multipoint tax. It is levied on gross turnover of dealers with sales in excess of the exemption threshold, and this applies to intermediate dealers even in States where the general sales tax is largely leviable at only one point."

The taxing of inter-State trade, which had earlier led to litigations[3] was through CST, which was levied and collected by the exporting State. CST was introduced based on the recommendations of Indirect taxes Enquiry Committee, 1953-54 (John Mathai committee). Issues still remained, as there were instances of sales being camouflaged as consignment. To tackle

[3] The Supreme. Oust in State of Bombay vs United Motors (SCR1069 SC, 1953) held that the State in which final consumption took place has the right to levy sales tax. But this decision was overruled in Bengal Immunity co vs State of Bihar (2SCR 603) held that ""Until Parliament by law made in exercise of the powers vested in it by clause (2) provides otherwise, no State can impose or authorise the imposition of any tax on sales or purchases of goods when such sales or purchases take place in the course of inter-state trade or commerce."

these, Constitution was amended through the 46th sixth amendment to tax consignment also by introducing item 92B in the Union List. But this was never implemented. These origin based taxes were, however, viewed as distortionary[4] The CST rates which had reached 4 per cent came down to 2 per cent with the introduction of State level VAT. The downward movement of rates was part of phasing out. The levy CST continued till it was subsumed in Goods and Services Tax (GST) with effect from July 1, 2017.

Coming to the shift from Sales Tax regime to the VAT, we need to look at the changes that took place in the Indian economy in the 1990s. In the 1990s, the economic policy of the Union Government underwent marked changes. From the 1950s till 1991, the economic philosophy envisaged a planned economy in which public sector was to reach commanding heights. The location of industries was regulated through licensing and capacity expansion was also subject to restrictions.

But, the gradual liberalisation, which had started in the 1980s or even before, gathered momentum in the early 1990s and the restrictions in the industrial policy were dismantled. As a consequence, States started competing for investments including foreign ones and substantial and competitive tax concessions were offered to attract investments.

Apprehensions were raised that this would lead to erosion of tax base in what was called as a process of 'race to the bottom'. Need was also felt to make the tax system less distortionary and to protect the tax base. It was felt that there

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[4] For a discussion on tax reforms at central and State level, see NIPFP(1994) and Rao and Rao (2006)

needs to be a floor rate for taxation. The constitution of Empowered Committee of State Finance Ministers was a step in this direction, as can be seen from the statement of Department of Revenue, Government of India on formation of the Empowered committee of State Finance Ministers on July 17, 2000.

"*The Empowered Committee of State Finance Ministers (EC) was originally set up on 17th July, 2000 by the Government of India with the Hon'ble State Finance Ministers of West Bengal, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Uttar Pradesh, Gujarat, Delhi and Meghalaya as members with an objective to monitor the implementation of uniform floor rates of sales tax by States and Union territories, to monitor the phasing out of the sales-tax based incentive schemes, to decide milestones and methods of States to switch over to VAT and to monitor reforms in the Central Sales Tax system existing in the country. Subsequently, Hon'ble State Finance Ministers of Assam, Tamil Nadu, Jammu & Kashmir, Jharkhand and Rajasthan were also notified as the members of the Empowered Committee. On 12th August, 2004, the Government of India decided to reconstitute the Empowered committee with Hon'ble State Finance/Taxation Ministers of all States as its members.*" (dor.gov.in)

Eventually, Value Added Tax (VAT) with input credit for intra-State purchase and sale of goods replaced the General Sales Tax[5]since 2005-06. Rates were harmonised through

[5] Burgess, Howes and Stern (1995) state that multiplicity and dispersion of rates in indirect taxation in India was typified by a maze of different rates, which were the result of numerous ad hoc modifications to tax legislation. There were as many as some 350 specific excise duty rates and forty ad valorem rates, the highest of which was 105 per cent (Purohit, 1992b; GoI, 1993a). Most states had at least twelve rates of sales tax ranging from 1 percent to 25 percent (Purohit, 1988, p. 272). The studies viewed that the rate differentiation had little economic rationale and were more associated with distributional judgments and

discussions in the Empowered Committee of State Finance Ministers. Though there were minor deviations in rates made by States, the rates were by and large rates harmonised under the VAT regime. VAT was considered a partial solution as it gave input tax credit only to intra-Sate purchases of goods. CST paid still remained as a cascading tax and services remained outside the tax net of the States.

Many States witnessed low growth rates of OTR since 2013-14 and it was felt that the growing services sector should come within their taxing power of the States. The exclusion of the services sector was leading to many litigations in the sales tax regime and was a limitation on the taxing powers of the States.

The intention to move to GST was made clear in the report of the Kelkar Task Force on Indirect taxes (2004), when it was suggested that all central excise duties should be replaced by CENVAT and uniformity in all State legislations and procedures on VAT were recommended. The idea for moving towards GST was first mentioned in the Union budget of 2006-07 and it was intended to implement GST from April 1, 2010. The Empowered Committee of State Finance Ministers was asked to come up with the roadmap and structure of GST (gstcouncil.gov.in/brief-history-gst).

The 13th Finance Commission constituted a Task Force, which recommended a wide coverage for GST at a rate of 12 per cent which was to be apportioned among the Centre and the States at 7 and 5 per cent respectively. The rate was single and exemption threshold was Rs 10 lakh. The 14th Finance Commission also discussed the introduction of GST and had

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views on the kinds of goods that should be encouraged in production. This was the outcome more of lobbying than of logic.

discussions with the Union Government and the empowered Committee of State Finance Minsters. The apprehensions of the States regarding revenue loss, fixing of Revenue Neutral rate (RNR) across States and compensation for the loss were discussed. The 14th FC felt that there was significant trust deficit among States on the issue of GST compensation and wanted a compensation mechanism outside the Ministry of Finance. The 14th FC expressed the hope that GST will have all the characteristics of a good tax system such as broad base, low rate, minimum rate differentiation, low compliance cost and reduced distortions to the economy. But 14th Finance Commission was unable to estimate the revenue loss to the States due to introduction of GST as there was absence of clarity on the design of GST and the final rate structure.

The deliberations had to go on and finally GST was implemented with effect from April 1, 2017 as a dual one with Central Goods and Services Tax (CGST) and State Goods and Services Tax (SGST). The inter-State trade was covered by Integrated Goods and Services Tax (IGST), which is equally divided between CGST and SGST for the State which is the final destination of consumption.

Yet, the bargain for GST was tough. Initially, the States while agreeing for harmonised rates wanted apportionment of rates at 60:40 between States and the Centre. Finally, 50:50 ratio was agreed upon with a compensation, which assured growth rate of 14 per cent per annum[6] of taxes subsumed in GST for five years of implementation. VAT was subsumed in the Goods and Services Tax (GST) regime with effect from July 1, 2017. The taxes subsumed in GST have been about 40-44 per cent of the OTR of the States while only 28 per cent of the central taxes

[6] The base year was taken as 2015-16.

were subsumed. After introduction of GST, harmonised rates were recommended by the GST Council, which has been formed as mandated in Article 279A of the Constitution of India. Under GST, the tax on sales taxes on goods and supply of services is collected by the State where the final consumption takes place. Major taxes still remaining outside the purview of GST are petroleum products and alcoholic liquor for human consumption[7].

The 15th Finance Commission report suggested that the inverted duty structure between intermediate inputs and final outputs need correction. It also stated that revenue neutrality which has been compromised by multiple rate structure and several downward adjustments needed to be restored. It also recommended rationalising of rates by merging 12 and 18 per cent rates and that States need to step up filed efforts for expanding the GST base and for ensuring compliance.

These indicate the scope for continuing reforms in the field of consumption taxes in India, despite major changes in tax policy in the last three decades.

With these major tax policy shifts in background, we analyse the trend in OTR of 15 major States in India during the 30-year period from 1990-91 to 2018-19[8]. The tax effort is

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[7] Taxes on petroleum products can be brought into GST, from the date notified by the GST Council.

[8] Das -Gupta (2012) has sound that introduction of VAT had positive impact on Own Tax Revenue of Haryana and Odisha among major States and in 50 per cent of other jurisdictions. The study traces large scale tax evasion ad given weakness in VAT administration identified in a performance audit by the Comptroller and Auditor General in 2009. Sen (2015) states that though sub-national VAT is more efficiency

measured by the ratio of OTR to GSDP at current prices. As already stated, the period of study, 1990-91 to 2018-19, witnessed major policy shifts and their impact on OTR needs analysis. How the States have performed in their own tax effort during this period is the focus of study[9].

3. Data Sources and Methodology

For the purpose of the study, States have been classified as High-, Middle- and Low-Income States based on their per capita incomes. Maharashtra, Gujarat, Haryana, Goa and Punjab have been classified as High-income States, Andhra Pradesh, Telangana, Karnataka, Kerala[10], Tamil Nadu, Uttarakhand and West Bengal as Middle-income States and Bihar, Jharkhand, Chhattisgarh, Madhya Pradesh, Rajasthan, Odisha and Uttar Pradesh as Low-income States. Per capita incomes are computed from comparable GSDP[11] published by Central Statistical Office (CSO).[12]

The study has utilised the OTR data from Reserve Bank of India's 'State Finances: A Study of the Budgets' and the GSDP data from National Income Accounts. The GSDP in current prices is of different bases and splicing has not been done.[13]. The

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inducing than a complex sales tax, the contribution of VAT to efficiency of entire indirect system is insignificant.

[9] The period after GST implementation is only two financial years 2017-18 and 2108-19 and no conclusions can be drawn.

[10] Kerala has now moved to be a High-Income State. But for most part of the period, it was a Middle-Income State.

[11] There have been four base year changes in 1993-94, 1999-2000,2 004-05 and 2011-12.

[12] Since we are analysing a long time period of 30 years, we are not using the latest ranking by the 15th Finance Commission, which is based in three-year average.

[13] When the ratio is taken, the inflation effect will cancel out.

growth rates and ratios are not varying even when splicing is done.

Question can be raised whether the more appropriate base for consumption taxes like General Sales Tax, VAT and GST is Private Final Consumption Expenditure (PFCE). The limitation in using PFCE from sample surveys of National Sample Survey Organisation (NSSO) is that the data are available from quinquennial surveys[14] and for the intervening years, there needs to be extrapolation, which can lead to unrealistic estimations. Moreover, PFCE is a component of GSDP. [15]

4. State-wise Trends

Here, we use five-year sub-periods starting from 1990-91to 1994-95, followed by 1995-96 to 1999-20000, 2000-01 to 2004-05, 2005-06 to 2009-10, 2011-12 to 2016-17 and the last two year period 2017-18 and 2018-19.

The five-year sub periods coincide with major events which influenced the economy and tax revenues. The first sub-period witnessed the beginning of economic liberalisation, with tax reforms at the central level and also higher economic growth rate on the low base effect after the 1991 crisis. The second sub-period saw the impact of competitive policies of the States in giving tax holidays to attract private investment and also a slowdown in economic growth. There were also expenditure pressures on the States from salary revisions and higher interest

[14] The results of the thin rounds for the intervening years cannot be used along with that of quinquennial rounds as there will be inconsistencies due to variation in sample size.

[15] It needs mention here that the PFCE estimated by the NSSO surveys and by the National Accounts Statistics widely differ. For a discussion, see Sundaram and Tendulkar (2003).

payment burden during this period. In the third sub-period fiscal correction from the expenditure side was implemented in many States. The fourth and fifth sub- periods are ones of post- VAT and global financial crisis. The national economy also saw slowdown in growth rates. The last two years mark the starting of GST.

The trends observed during these five-year sub-periods are the following: In the initial five-year period, Middle income States performed better than High- and Low-Income States. This continued till 2009-10. During the last two sub-periods, High income States performed slightly better than the Middle-Income States. The Low-income States have shown a consistent increase in the third, fourth and fifth sub-periods and a minor fall in the last sub-period (Table 1). 2017-18 and 2018-19 is treated as a separate sub-period[16].

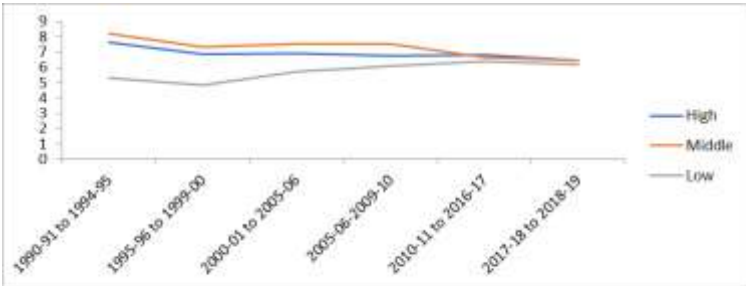
Table 1: Comparative OTR-GSDP Ratios of High-, Middle- and Low-Income States – 1990-91 to 2018-19

States	1990-91 to 1994-95	1995-96 to 1999-00	2000-01 to 2005-06	2005-06-2009-10	2010-11 to 2016-17	2017-18 to 2018-19
High	7.63	6.86	6.92	6.74	6.79	6.46
Middle	8.20	7.32	7.53	7.53	6.66	6.45
Low	5.30	4.86	5.73	6.10	6.41	6.21
All States Average	7.04	6.35	6.62	6.71	6.60	6.50

Source: Computed from data sources mentioned in the text.

[16] This is done to maintain uniformity of five years. Else, last period will be seven years. The last two years are after introduction of GST

Figure 1: OTR-GSDP Ratios of High-, Middle- and Low-Income States



Source: Table 1

The downward slide is marked in the case of Middle-income States, whose tax effort was above the all-States average till 2009-10. The downward slide had started since 1995-96 and there was a further fall since 2005-06. The upward movement in the case of Low-income States had begun since 1995-96 continued till 2016-17. There is a flattening in the last sub-period, 2017-18 and 2018-19. In the case of High-income States, the downward slide started since 1995-96.

Table 2: OTR-GSDP Trends across High, Middle and Low Income. States – 1990-91 to 2018-19

States	1990-91 to 1994-95	1995-96 to 1999-00	2000-01 to 2005-06	2005-06-2009-10	2010-11 to 2016-17	2017-18 to 2018-19
Mean	7.04	6.35	6.72	6.79	6.62	6.37
Standard Deviation	1.54	1.30	0.92	0.72	0.20	0.14
C.V.	0.22	0.21	0.14	0.11	0.03	0.02

Source: Computed from data mentioned in the text

The dispersion of OTR-GSDP ratios between High-, Middle- and Low-Income States has significantly declined during the period under analysis. The standard deviation has declined from 1.54 in the first sub-period to 0.14 in the last sub-period and the decline has been consistent. The convergence is marked since 2010-11. This has happened because of fall in the OTR-GSDP ratio of High- and Middle-income States and the rise in that of Low-income States (Table 1). An analysis of the State-wise trends can provide more insight (Table 3).

Table 3: OTR-GSDP ratio across States

States	1990-91 to 1994-95	1995-96 to 1999-00	2000-01 to 2005-06	2005-06-2009-10	2010-11 to 2016-17	2017-18 to 2018-19
	Low Income States					
Bihar	4.46	4.14	4.23	4.42	5.81	6.08
Chhattisgarh			6.05	7.22	7.00	7.34
Madhya Pradesh	5.74	5.48	6.63	7.30	7.53	6.64
Odisha	4.95	4.35	5.37	5.61	6.17	6.70
Rajasthan	6.1	5.54	6.55	6.64	6.16	6.44
Uttar Pradesh	5.25	4.81	5.93	6.54	7.26	7.75
	Middle Income States					
Andhra Pradesh	7.08	6.38	7.47	7.71	7.08	6.70
Karnataka	9.45	8.51	8.99	9.47	7.58	6.65
Tamil Nadu	9.31	8.55	8.82	8.49	7.33	6.55
West Bengal	5.94	4.66	4.37	4.36	5.31	5.80
Kerala*	9.24	8.47	7.99	7.64	7.05	6.66
	High Income States					
Gujarat	8.41	7.27	7.07	6.44	6.42	5.45
Haryana	7.71	6.68	7.62	7.36	6.44	6.27
Maharashtra	7.47	6.85	7.60	6.90	6.80	7.30
Punjab	7.00	6.21	6.71	6.88	6.95	6.37

Source: Computed from data mentioned in the text. Note: * Moved from Middle to High Income.

4.1 Low Income States

For Bihar, Odisha and Uttar Pradesh, there has been consistent rise in OTR-GSDP ratio except in the second sub-period. For Madhya Pradesh, there has been a rise from the second to fifth sub-periods and fall in the last two years. Chhattisgarh, which was formed in the third sub period has shown improvement in OTR-GSDP ratio, except for a minor fall in the fifth sub-period. There is no clear trend observed for Rajasthan.

4.2 Middle Income States

The OTR-GSDP ratio of Andhra Pradesh declined in the second sub- period and improved markedly during the third sub-period. It showed a mild improvement in the fourth sub-period and declined during the last two sub periods.

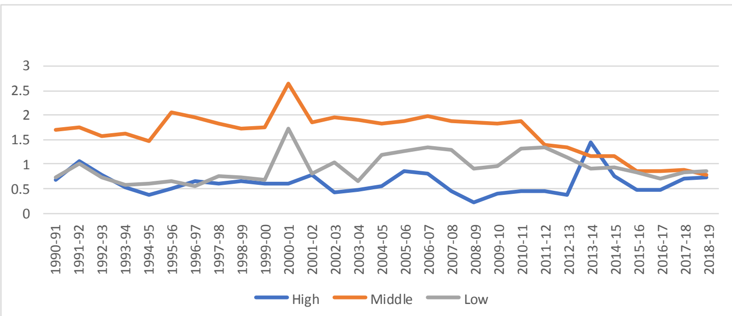
In Karnataka, there is a marked decline in the last two sub-periods. In the prior sub- periods, there was an initial decline and a pick up. There has been a consistent fall except for a marginal rise in the third sub-period in Tamil Nadu. In West Bengal, there has been a consistent fall from the first to the fourth sub-periods and a rise during last two sub periods. Kerala has shown a consistent decline during all the sub-periods.

4.3 High Income States

There has been a consistent decline of OTR-GSDP ratio during all the sub-periods for Gujarat. In Maharashtra, there is no consistent trend. After a decline in the second sub-period, there has been a rise in the third sub- period and fall in the fourth and fifth sub- periods and a rise in the last sub- period. In Punjab, after a fall in the second sub-period, there has been a rise in the three subsequent sub-periods and a fall in the last two years. In Haryana, there is a consistent decline since the fourth sub-period.

The dispersion within the groups, as measured by the standard deviation have also declined in the recent years. The dispersion has been rather high among Middle Income States, followed by Low Income and High-Income States before converging in the last sub-periods (Figure 5).

Figure 1: Trends in Dispersion of OTR-GSDP in High, Middle and Low Income States-1990-91 to 2018-19



5. Relationship between Per capita income and Tax Effort

The results of the regression testing the statistical significance of association between per capita income and tax effort measured by OTR-GSDP ratio, show that the association is positive and statistically significant for Bihar, Odisha and Uttar Pradesh. It is positive but statistically insignificant for Rajasthan and Madhya Pradesh and Andhra Pradesh. It is negative and statistically significant for Gujarat, Karnataka, Kerala, Tamil Nadu and Maharashtra (Table 4).

The statistically significant negative sign is present for certain Middle and high per capita income States. This is counter intuitive[17].

To test this further, the association between OTR-GSDP ratio and non-agricultural per capita GSDP was tested. The results show that the relationship is negative and statistically significant for Gujarat, Haryana, Karnataka, Kerala and Tamil Nadu. It is positive and statistically significant for Odisha, Uttar Pradesh and Telangana. The result is not statistically significant for Bihar and Maharashtra. For all other States, the results are

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[17] The intuitive reasoning for a positive relation between per capita income and tax effort is stated in Lotz and Morss (1967). " *In addition to aggregate income, the denominator in the tax ratio, other factors affect a country's taxable capacity.8 One of the most important is the level of economic development. Economic development is usually accompanied by a higher rate of literacy, increased monetization, and stricter law enforcement—all of which can be expected to increase taxable capacity. Economic development has many dimensions and cannot be measured precisely either by a single variable or by a simple combination of variables. However, one variable frequently used by economists to give a rough idea of the development stage is per capita income. Hence, one would expect taxable capacity and per capita income to move in the same direction."*

There is another reason to expect a positive relationship between per capita income and taxable capacity. For two countries with the same total income but with a per capita income of, say, $50 in the first country and $1,500 in the second, taxable capacity is greater in the second because a smaller proportion of total income is required for subsistence needs and more "surplus" is available for taxation and other purposes. It follows that, if the two countries raise the same total amount of tax revenue and thus have equal tax ratios, the first country is making the greater tax effort.

same, though the value of the coefficients are much lower[18] when non-agricultural per capita income is used as the explanatory variable.

We tested further using the logarithmic transformation of the variables. It is seen that the association between tax effort and per capita income is negative and statistically significant for Gujarat, Haryana, Karnataka, Kerala, Maharashtra and Tamil Nadu while it is positive and statistically significant for Chattisgarh, Odisha, Uttar Pradesh and Telangana. When the association with logarithmic transformation of per capita non-agricultural GSDP was tested, the same results were obtained. The coefficients are of higher value than in the case of untransformed variables. (Table 4A).

Similar results have been obtained in the study by Mukherjee (2017). Nambiar and Rao (1972) state that when per capita income and per capita development expenditure are used as explanatory variables and ratio of tax revenues to incomes is the dependent variable, there was poor fit. The R^2 in both cases is very insignificant. This contradicts a generally held hypothesis that income and developmental expenditure are among the important determinants of tax performance of governments. Cross country analyses, however, reveal that there is positive relation between tax-GDP ratio and per capita GDP. [OECD (2020), Le, Dodson and Bayraktar (2012)]

Further analysis with committed expenditure share in total expenditure, central transfers, share of manufacturing sector in GSDP, proportion of non-essential luxury consumption items

[18] This implies that even when association is statistically significant, the change in dependent variable which is associated with per unit change in explanatory variable is quite small.

in PFCE, share of small and medium scale enterprises in total industrial establishments as explanatory variables can be done to test how the results vary. Intuitively, higher proportion of committed expenditure can compel a State to step up its tax effort and expectation is that it will have a positive and significant relation. But a higher share of central transfers through taxes and grants can have a moderating impact on OTR effort. High incomes can lead to a higher share of luxury consumption including that of precious metals and in this area potential for tax evasion is higher and chances of detection less. Higher share of this is likely to have impact negative impact on tax effort given the evasion potential. If there are more small and medium scale enterprises, cost and effort of enforcement will be higher and this can have a negative impact on tax effort. These analyses are not down in the present study, but suggested for further studies.

Table 4: Association between OTR GSDP Ratio and Per Capita Income

States	Coefficient	t-value	DW transformed	Level of Per Capita ncome (2019-20)	Statistical Significance
Bihar	1.38 (0.00001)	4.43 (0.27)	1.98 (2.1)	44575	Positive Highly. Significant (Not Significant)
Madhya Pradesh	0.28 (0.00001)	0.29 (0.43)	1.84 (2.04)	68757	Not significant
Rajasthan	-0.32 (0.00000)	-0.73 (0.31)	2.27 (2.23)	78390	Not Significant
Orissa	1.37 (0.00002)	4.21 (4.09)	1.76 (1.83)	78680	Highly significant
Uttar Pradesh	0.92 (0.00004)	2.86 (5.02)	2.05 (2.29)	101768	Significant
Punjab	-0.16	-0.27	1.93	118848	Not Significant

	(0.000000)	(-0.11)	(1.94)		
Andhra Pradesh	0.032 (-0.00002)	0.07 (-0.67)	1.8 (1.55)	132284	Not Significant
Kerala	-1.66 (-0.00001)	-7.97 (-4.93)	1.97 (2.00)	149563	Highly Significant (negative)
Maharashtra	-0.56 (-0.0000)	-2.12 (-1.37)	1.73 (1.68)	152566	Significant (negative)
Tamil Nadu	-1.68 (-0.00001)	-4.97 (-5.83)	1.79 (1.56)	153853	Highly Significant (negative)
Karnataka	-1.97 (-0.00002)	-3.06 (-4.41)	2.04 (1.95)	154861	Significant (negative)
Gujarat	-1.79 (-0.00001	-4.32 (-3.03)	1.5 (1.42)	165359	Highly Significant (negative)
Haryana	-1.04 (-0.0000)	-2.06 (-2.26)	1.6 (1.60)	176199	Significant (negative)
Goa	-0.96 (-0.0000)	-1.72 (-1.10)	1.73 (1.73)	367226	Weakly Significant (negative)

Table 4A: Association between OTR GSDP Ratio and Per Capita Income (logarithmic transformation)

States	Coefficient	t-value	DW transformed	Level of Per Capita Income (2019-20)	Statistical Significance
Bihar	-0.14 (-0.14)	0.03 (-0.31)	1.52 (2.0)	44575	Positive Highly. Significant (Not Significant)
Madhya Pradesh	0.25 (0.27)	1.27 (1.40)	2.03 (2.03)	68757	Not significant
Rajasthan	0.04 (0.06)	0.25 (0.44)	2.22 (2.21)	78390	Not Significant
Orissa	0.46* (0.43*)	3.50 (3.76)	1.79 (1.76)	78680	Highly significant
Uttar	0.88*	7.39	1.94	101768	Significant

Pradesh	(0.80*)	(7.50)	(1.53)		
Punjab	0.0007 (0.01)	0.00 (0.06)	1.93 (1.93)	118848	Not Significant
Andhra Pradesh	0.04 (0.11)	0.03 (0.09)	1.52 (1.52)	132284	Not Significant
Kerala	-0.75* (-0.69)	-10.58 (-10.94)	1.97 (1.97)	149563	Highly Significant (negative)
Maharashtra	-0.24** (-0.23**)	-2.02 (-1.98)	1.76 (1.76)	152566	Significant (negative)
Tamil Nadu	-0.83* (I-0.78*)	-4.76 (-4.52)	1.82 (1.79)	153853	Highly Significant (negative)
Karnataka	-0.93* (-0.85*)	-3.25 (-3.11)	2.05 (2.0)	154861	Significant (negative)
Gujarat	-0.84* (-0.79*)	-4.25 (4.30)	1.58 (1.59)	165359	Highly Significant (negative)
Haryana	-0.49* (-0.42*)	-2.22 (-2.13)	1.64 (1.64)	176199	Significant (negative)
Goa	-0.16 (-0.16)	-0.80 (-0.85)	1.71 (1.71)	367226	Weakly Significant (negative)

Source: Computed from data mentioned in the text. Note: *,** denotes statistical significance at 1 % and 5% levels respectively. Figures in parentheses indicate the association when non-agricultural per capita GSDP is used as the explanatory variable.

5. Convergence of OTR Growth Rates

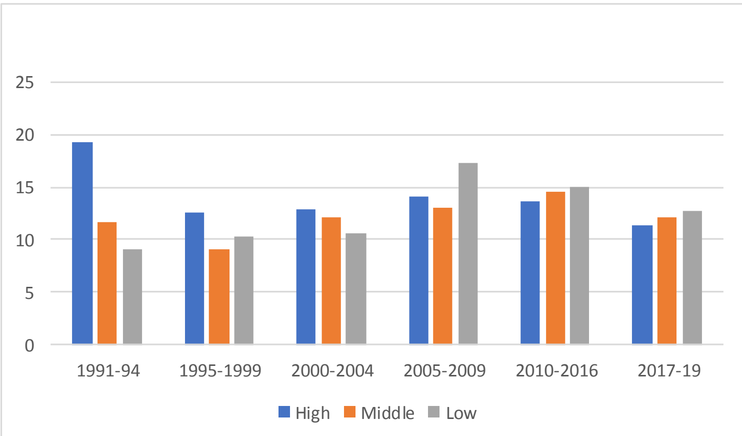
The trend is towards convergence can be seen from the fall in standard deviation, The fall in the last two sub-periods is marked. It is line with the trend in OTR-GSDP ratio.

Table 5: OTR Growth Rates of States (%)

States	1991-94	1995-1999	2000-2004	2005-2009	2010-2016	2017-19
High	19.27	12.52	12.83	14.03	13.70	11.34
Middle	11.68	9.03	12.08	12.96	14.52	12.09
Low	9.08	10.30	10.60	17.29	14.98	12.69
Standard Deviation	5.30	1.76	1.13	2.25	0.64	0.68

Source: Computed from the data mentioned in the text

Figure 6: OTR Growth rate of States



Source: Table 5

6. Towards Conclusions

The study briefly traces the policy shifts that took place in commodity taxation as this tax comprises more than two-thirds of OTR of States. While analysing the trends in OTR of States, the study finds that the tax effort of 15 major States has been converging in the period 1990-91 to 2018-19. The period witnessed substantial changes in the economic policy at the central level and State level tax reforms. The growth rates of OTR among the high-, middle- and low-income States have also been converging. In the OTR-GSDP ratio as well the OTR growth rates, the lower income States have shown a rise. States at the higher end of private final consumption expenditure have witnessed a fall in the OTR-GSDP ratio. This will need an analysis of the administrative efficiency in the tax collection as well as structural and other factors in the economy. It is suggested that the association that has been tested between tax effort and income can be analysed in greater detail by including more explanatory variables and this can be done in a further study.

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GIFT Campus, Chavadimukku, Sreekaryam P.O,
Thiruvananthapuram – 695017, Kerala, India.
Phone: +91-471–2596960, 2596970, 2596980, 2590880
E-mail: program@gift.res.in Website: www.gift.res.in