Performance Evaluation of Sales Tax Administration: A Case Study of Gujarat

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In most Indian states, sales tax is the largest source of finance. Yet, no major attempt has been made towards a quantitative assessment of performance of tax administration nor to realize its full potential. For this, one must study the factors involved and decide on those which play a comparatively more important role in tax administration irrespective of the kind of tax structure in vogue or the variations in methods and styles in different states. This paper studies the problem in detail with regard to Gujarat though the approach could be equally well applied to any other state or region.

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Sales tax is the largest source of finance in most states of the Indian Union.[1] In Gujarat, it forms about 67 per cent of the total revenue. Naturally, any attempt to mobilize further resources for planned development or otherwise requires a careful look at the possible potential of this source of revenue besides introduction of new taxes if any. The state of Gujarat had levied this tax since its inception and by this time ample data are available to uncover the problem involved in its implementation.

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1. The Constitution of India empowers the states by virtue of item 52 of list II of its seventh schedule to levy a tax on the sale and purchase of commodities other than newspapers. The enabling statutes generally are the sales tax acts passed by the state legislatures. For example, in Gujarat, the enabling acts are a) the Gujarat Sales Tax Act, 1969, and b) the Bombay Sales of Motor Spirits Taxation Act, 1953. In addition to these state acts, there is a federal legislation in respect of levy of sales tax on transactions of sale in the course of inter-state trade. This is known as the Central Sales Tax Act, 1956, which lays down that the proceeds from such a levy should be collected by the states and should go to the exchequers of the states of origin. For a comparative picture of the enactments of different states in India, see Mahler (1970).

In the relatively more urbanized and industrialized states such as Tamil Nadu, Maharashtra, and Gujarat, the proportion of tax yield from sales tax to total tax received is above 60 per cent and is about 40 to 50 per cent in other states (Government of Gujarat, 1977).

Simplification of the tax structure and procedure could possibly improve the tax potential[2] but one must learn as to which factors play a relatively more important role in tax administration irrespective of the kind of tax structure in vogue. Such an understanding could be used straightaway to identify those instrumental factors which could be used to achieve the desired level of tax realization. A general approach to study and evaluate the tax administrative machinery is not appropriate owing to possible variation in methods and styles in various states. Therefore, we have chosen to study the problem in detail but the approach could be applied to any other state or region.

Though literature on sales tax continues to grow, there has been hardly any attempt to provide a quantitative assessment of performance of tax administration that could enable us to suggest ways of improving efficiency. A beginning is made in this direction by the present study. To start with, we describe very briefly the structure of tax administration in Gujarat and identify the tasks as well as links amongst them. This discussion provides us the sources of hypotheses which are modelled later in the paper. We use data over the period from 1961-62 to 1975-76 to quantify the models and present those finally selected on economic and econometric grounds. Finally, relevant inferences have been drawn from these results.

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2. If the revenue yield is far below potential, the usual practice is to resort to higher rates or to add new taxes. Thus, the nominal rate becomes higher and the chances of evasion greater. Due observes: "Many governments have added more and more taxes instead of seeking to enforce effectively those they have; and the number of taxes acceptable under usual standards is, after all, rather limited. Thus, less acceptable taxes are used, and compliance and administrative costs are increased." (Due, 1970). If the choice is between reforms and strengthening the existing administrative machinery, Surrey (1967) would advocate for the latter.

3. For a detailed description of the sales tax system as obtained in Gujarat, see Government of Gujarat (1968, 1978).

Organization and Structure of Sales Tax Administration

Sales tax is levied in Gujarat according to the system of dual levies.[3] It consists of imposing sales tax at the primary stage of processing in some cases, at the final stage of processing in others, and a combination of the two in case of such commodities whose trade channels are difficult to identify. Manufactured goods and industrial raw materials are easily controllable at the first point of manufacture and, therefore, taxed at the first stage itself. The firms falling in this category are fewer in number but better organized in respect of bookkeeping and accounting. A large number of commodities, especially belonging to agriculture and the primary sector, are taxed at the final stage of processing. In a limited sense, the value added is also operative under the system known as "recognition sector." In this system inputs are tax free for certain recognized goods and only final products are taxed.

There are limits of turnover for tax payers. Dealers who are basically resellers and have an annual turnover of Rs. 30,000 are liable to register themselves for tax payment. This limit is reduced to Rs. 20,000 for manufacturers and importers.

Sales tax administration in Gujarat is headed by the Commissioner of Sales Tax. He is assisted by certain staff at the headquarters as well as by certain others located at divisional headquarters. At the headquarters, an additional commissioner deals with personnel matters and a deputy commissioner is in charge of state-wide enforcement and intelligence wings. At the division level, each division is supervised by a deputy commissioner assisted by four to five assistant commissioners who in turn are assisted by sales tax officers, inspectors, and clerks. Sales tax officers attend to duties of registration of dealers, assessment work, audit work, enforcement, and intelligence work. The assistant commissioners supervise the work of sales tax officers as well as function as appellate authorities. One assistant commissioner in each division is exclusively assigned enforcement and intelligence work.

Among the various components of tax administration in Gujarat, enforcement task appears to get top priority. The enforcement machinery consists of eight units. Each unit has three sales tax officers along with inspectors, clerks, etc. These units are located in Ahmedabad, Rajkot, Bhavnagar, Jamnagar, Baroda, and Surat with Ahmedabad city having three units. These units are equipped to watch tax evasion, build market intelligence, spring raids on suspicious places, and seize books of account.

Besides this, the administration has set up a modest training centre for fresh recruits as well as in-service tax personnel. These include sales tax inspectors, clerks, and sales tax officers. The courses are of short duration and conducted with the help of experienced officials in the administration. The centre has only a minimal strength in terms of training staff. Expenditures on enforcement and training formed 0.89 and 0.35 per cent respectively of sales tax revenue recovered in 1975-76, while expenditure on tax administration as a whole accounted for 1.37 per cent.

Adoption of aggressive attitude on the part of administration is justifiable because it helps in correcting the attitudes of tax payers towards the laws (Surrey, 1967, p. 503). While some tax payers may make mistakes owing to ignorance, several others may be doing so deliberately to avoid payment of taxes. A passive attitude on the part of administration could undermine the entire structure by indirectly encouraging honest tax payers to follow the dishonest ones. Audit, an important aspect of the enforcement of tax laws, helps in checking the reliability of tax returns. It also serves an educative purpose insofar as it coerces the tax payers to understand the process of correct reporting for future purposes.

Certain skills are expected on the part of tax personnel for carrying out their assignments with professional efficiency. These skills include building up of information about trade channels, checking up the reliability of tax payers' records and returns, reconstruction of records when found missing or tampered with, an awareness about modes of possible evasion

of taxes, proper accounting, and book-keeping. They would also require some training so as to adopt better methods of collecting market intelligence and drawing proper inferences from the data.

Keeping in view the foregoing description of the tasks of tax administration, we see that tax administration would like to categorize its main tasks as:

enforcement of tax laws on the liable parties;

training of tax personnel to improve their efficiency; and

identification and improvement of tax potential of the state.

Obviously, the first two tasks, if carried out properly, will lead to the achievement of the third task in a major way. But it needs to be supplemented with micro study of the state's economy to identify the deserving new taxes to be imposed and the undeserving old taxes to be withdrawn so as to arrive at a widely acceptable tax structure. Even this task of research and study in fiscal planning could be entrusted to the training and research centre of the tax department. To make sure that the training wing is equipped to carry on this task, a research unit might be necessary. It would turn out ultimately that enforcement and training are two important instruments available to tax administration to achieve its goal of realizing larger sales tax revenue. Its performance can, therefore, be evaluated by quantifying the contributions of enforcement and training efforts towards tax realization and then making proper inferences regarding their relative performance.

Model

Granting that enforcement effort (EE) and training effort (TE) are the main tasks of tax administration to achieve a higher or desired tax revenue (RV), we may treat EE and TE as causal variables and RV as the corresponding effect variable. Besides these causal variables, sales revenue may also depend upon the health of the state economy, business level, and cooperative attitudes of the tax payers. All these factors would lead to improvement in tax potential (TP) of the state and consequent-

ly contribute to tax revenue. Therefore, in general we may represent this cause and effect relation as

$$RV = f(EE, TE, TP, u) \qquad (1)$$

where u represents the error term.

The causal relation in equation (1), however, ignores the possibility that tax potential is itself influenced by enforcement and training expenditure. The current tax potential may also be influenced by the level of previous tax potential insofar as tax potential can be thought to represent cooperative or uncooperative attitude of the tax payers. It is quite likely that the cooperative attitude of the tax payers will enhance tax potential and if the cooperative mood is carried on in future owing to habit, then lagged tax potential (TPL) will influence the current tax potential. This possibility can be expressed as

$$TP = f(TPL, EE, TE, v) \qquad (2)$$

where v represents the error term.

All the causal variables in equations (1) and (2) are seen to be positively contributing to the corresponding effect variables. This leads us to expect the corresponding marginal contributions to be all positive. Thus, we can write:

$$\left. \begin{array}{ccc} \dfrac{\partial RV}{\partial EE} \geq 0, & \dfrac{\partial RV}{\partial TE} \geq 0, & \dfrac{\partial RV}{\partial TP} \geq 0 \\[2mm] \dfrac{\partial TP}{\partial TPL} \geq 0, & \dfrac{\partial TP}{\partial EE} \geq 0, & \dfrac{\partial TP}{\partial TE} \geq 0 \end{array} \right\} \qquad (3)$$

Empirical Results

Data on sales tax revenue recovered and enforcement and training expenditures are readily available. Data on tax potential are difficult to obtain directly but can be proxied by the sum total of revenue collected and revenue pending for recovery. Even this measure would be an underestimate because revenue pending for recovery represents unrealized amount from dealers falling under the tax net and excludes those who might have been eluding it. Nevertheless, the proxy can

be used effectively provided it bears the same trend as the true variable irrespective of whether it is an over or underestimate and this possibility is likely to hold good in the present case. The data are presented in Table 1.

Using these data, linear and non-linear forms of equations (1) and (2) were estimated. While doing so, all combinations of the causal variables in terms of current and lagged values were considered and empirical results judged from economic and econometric considerations in each case. The following specifications scored better in terms of the above mentioned considerations and are reported along with relevant empirical details. It will be seen that variable EE gets dropped out of equation (1) and TE from equation (2) because these make quite insignificant contributions to the respective explained variables. The figures in parentheses denote T values, and an asterisk indicates that the coefficients are significant at 95 per cent level of significance:

$$RV = 0.030 + 0.932^* \ TP + 0.021 \ TE \qquad (4)$$
$$ (170.53) (1.27)$$

$$R^2 = 0.999, \ DW = 1.86$$

$$TP = -0.383 + 0.736^* \ TPL + 0.815^* EE \qquad (5)$$
$$ (4.87) (3.25)$$
$$R^2 = 0.988, \ DW = 2.08$$

The estimated slope coefficients are all positive so that the requirements of equation (3) are met in full. Estimated R^2 are close to unity in either case indicating that the chosen models have high predictive power as well as high compatibility with the sample data. All the slope coefficients except that of training effort are statistically significant at 95 per cent level of confidence. Estimated values of Durbin-Watson statistic indicate absence of first order auto-correlation when tested against 95 per cent level of confidence. This suggests that the estimated model is acceptable from the point of view of economic as well as econometric considerations.

There is, however, one more aspect of the models which requires attention before we decide to use these results for policy purposes.

This relates to the fact that models (4) and (5) constitute a simultaneous causation model whereas estimates are obtained according to the ordinary least squares procedure. The tax potential variable is working simultaneously as cause and effect variables. Therefore, we may consider RV and TP as endogenous variables. We may remember the way we proxied TP and, therefore, unrealized revenue (UR) can be considered as the third endogenous variable because we can write it as

$$UR = TP - RV \qquad (6)$$

These considerations are suggestive of treating the model implied by (4), (5), and (6) as a three-equation complete system model in terms of three endogenous variables (RV, TP, and UR) and four predetermined variables (unity, TE, RE, and TPL). The order condition of identifiability tests enables us to conclude that the models implied by (4) and (5) are over-identified. We have, therefore, treated the model as a complete system and estimated the coefficients according to two-stage least squares. The estimated model is reported below:

$$RV = 0.032 + 0.930TP + 0.025TE \qquad (7)$$
$$TP = -0.383 + 0.736TPL + 0.815EE$$

A comparison of the above two sets of estimates shows that the tax potential equation remains unchanged while the revenue equation is altered slightly in terms of co-efficient estimates. This is because the tax potential variable works as causal as well as effect variable while revenue variable works as effect variable only.

Policy Conclusions

Considering equations (6) and (7) we can solve for endogenous variables in terms of predetermined variables. The solutions are given below:

$$\left.\begin{array}{l} RV = -0.324 + 0.684TPL + 0.758EE + 0.025TE \\ UR = -0.059 + 0.052TPL + 0.057EE - 0.025TE \\ TP = -0.383 + 0.736TPL + 0.815EE \end{array}\right\} \quad (8)$$

These relations indicate that tax potential is not affected by training effort while revenue realized and pending is influenced by train-

ing and enforcement efforts. Training effort contributes positively to revenue and negatively to pending revenue while enforcement effort contributes positively to all the endogenous variables. Inference relating to marginal contributions is difficult to make from equation (8) because of the presence of lagged tax potential variable in each equation. To overcome this problem we proceed as follows.

First we evaluate the values of endogenous variables for the last sample period and represent this step by '00'. Then we increase EE by one unit and obtain the values of the endogenous variables for the next year. This step is represented by '10'. Similar calculations are made by increasing TE by unity and we represent it by '01'. In either case, unit increase is equal to increase by 10^5 rupees. The results of these calculations are presented in Table 2 with the exception that the figure 18.64 in column 01 is obtained by using equation (6).

These estimates can be used to obtain marginal contributions of steps '10' and '01' by treating step 00 as the base. The results are given in Table 3.

The results in Table 3 suggest that emphasis on enforcement effort is more advantageous when compared to emphasis on training efforts. Increase of enforcement expenditure by Rs.100,000 leads to increase in sales tax revenue by Rs.240 million and thus generates a surplus of Rs.239.9 million. This surplus remains unsurpassed by step '01'. Revenue pending is, however, reduced by increase in training effort but its contribution to revenue is relatively low. These results considered together suggest that strengthening of enforcement has a good impact on increasing sales tax revenue but emphasis on this factor alone is not sufficient. Though a greater stress on training effort can generate relatively lower revenue, it can still reduce the magnitude of unrealized revenue. Training wing needs greater attention than it got before despite the fact that its impact will continue to be the same even if training programmes were better organized. In fact, the empirical evidence suggests that the causal effect of training is in the right direction.

These results can be used to provide control solution of enforcement and training efforts for chosen growth in tax revenue and tax potential (Misra, forthcoming). Such calculations will, however, be more meaningful provided data were available for the latest period and the objectives of tax administration were decided in unambiguous terms.

These inferences are valid for short-term conclusions only because in the long-term the underlying structure might get changed. For all practical purposes one may continue using short-term conclusions by first updating the data base, then re-estimating the proper model, and finally using the estimated model to deduce the policy for the next period. Such an approach would account for any change in the relative importance of enforcement and training efforts over various time periods in future and thus ensure efficiency of these efforts over long-term as well.

Table 1
Data on Variables

(in Rs.)

Unit of Measurement	RV 10^8	TP 10^8	TE 10^5	EE 10^5
1961-62	1.30	1.47	0.00	1.00
1962-63	1.54	1.64	0.00	1.00
1963-64	1.96	2.08	0.00	1.31
1964-65	2.48	2.64	1.00	1.51
1965-66	2.70	2.88	1.00	1.71
1966-67	3.51	3.71	1.00	2.55
1967-68	3.92	4.15	1.12	3.22
1968-69	4.59	4.83	1.09	3.42
1969-70	5.46	5.75	1.51	2.33
1970-71	6.38	6.69	2.77	3.20
1971-72	7.36	7.72	3.08	3.86
1972-73	8.65	9.15	4.27	5.34
1973-74	9.40	10.06	4.39	5.24
1974-75	13.61	14.43	3.45	7.63
1975-76	15.71	16.81	3.50	8.28

Table 2
Estimated Endogenous Variables

	Step		
	00	10	01
RV	15.90	18.30	17.56
UR	1.08	1.26	1.18
TP	16.98	19.56	18.64

Table 3
Marginal Contributions

	Step	
	10	01
RV	2.40	1.65
UR	0.18	0.10
TP	2.58	1.76

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