REVENUE IMPLICATIONS OF INTRODUCING VALUE ADDED TAX AT STATE LEVEL

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Preface

The National Institute of Public Finance and Policy has undertaken this study at the instance of the Twelfth Finance Commission. The study team consists of Pinaki Chakraborty and Ujjaini Datta. Views expressed in the report are those of the authors. The members of the Governing Body of the National Institute of public Finance and policy are in no way responsible for these.

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New Delhi Director

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Revenue Implications of Introducing Value Added Tax at State Level

Introduction

The sales tax, which is the most important source of revenues at the state level in India, the idea of transforming it to a value added tax (VAT) system began in early 1990s[1]. Subsequently, the committee of state Finance Ministers arrived at a consensus that the existing sales tax system should be transformed into a system of VAT. The VAT is a method of taxing the final consumer spending in stages. In other words, it is a multi-stage tax levied on the value added at each stage. The transition processes, the method, the optimal design of VAT are the issues, which are still being debated. Though there are ambiguities that still exists on the implementable VAT design, the broad consensus on major issues on the design of VAT seems to be emerging among the states.

The rationale behind the introduction of VAT though well known, still one may briefly mention that unlike the cascading type of sales tax system, the destination based principle VAT can be very useful in intra-state sales by eliminating cascading, as well as inter-state sales and trade with third countries by zero rating of exports. The attributes which impel countries to turn to VAT as the best among the instruments of taxing consumption and made it into a "quintessential" tax of this century primarily are: its neutrality[2], transparency, certainty and self-policing mechanism (NIPFP: 1994). The VAT is the only alternative to the current system of sales taxation, which apart from cascading of tax through production of inputs, creates economic distortions through multiple tax rates, selective exemptions and incentives. The neutrality character of VAT is not only essential for correcting for these distortions, it also helps in developing the common market both internationally and domestically.

Few states in India have experimented with the VAT implementations in a piecemeal fashion[3]. A full-fledged VAT is still to commence at the state level. It has been agreed upon by all the states, except Uttar Pradesh to introduce VAT by 1st April

[1] With the publication of the report titled "Reform of Domestic trade Taxes in India: Issues and Option" by National Institute of Public Finance and Policy in the year 1994.
[2] For a detailed discussion on neutrality character of VAT refer Cnossen (1992) and Tait (1988).
[3] For the chronology of events in the process of implementation of VAT refer (Rao: 2004)

2005, i.e. in the FY 2005-06. However, there are considerable complexities involved regarding the treatment of interstate sales, consignment transfers and treatment of input tax credit thereon, multi-point taxation of declared goods and extension of state taxes to textile, tobacco and sugar in a full fledged VAT regime. Also, states are worried about how to compensate for their revenue loss, if any, on account of the introduction of VAT. Central government has agreed to compensate the states in case they suffer revenue loss in the process of transition to VAT. The objective of this study is to develop a methodology to quantify whether there will be any loss of revenues on account of the introduction of VAT and provide estimates of compensation if any for two states, viz., Andhra Pradesh and West Bengal.

Apart from the introduction, rest of the paper has six sections. The section I discusses the consensus on VAT design and the issue of compensation of revenues by the centre in case there is VAT induced revenue loss to the states. The section II discusses the theoretical issues with regard to the alternative methods of estimation of appropriate VAT base. The methodology for the estimations of compensation and revenue neutral rates is delineated in section III. Section IV interprets the data and provides empirical estimates of revenue gain / loss and the revenue neutral rates in the context of VAT. Section V provides a medium term projection of VAT revenues and corresponding revenue loss / gain. Section VI draws conclusions.

I. Consensus on VAT Design

A proper design of VAT is critical to achieve the desired outcome of value added taxation. Rao (2003, p-627) argued that "while the desirability of implementing VAT at the state level is indisputable, it is necessary to ensure that the tax is designed and the reform calibrated properly." The major issues in which there have been constant deliberations in the Empowered Committee on VAT are the rate structure, revenue neutral rate (RNR), treatment of interstate sales and returning the right to levy sales tax on sugar, textile and tobacco to states. The Empowered Committee is also trying to install a tax information exchange system for better coordination and exchange of information in VAT regime. The objective of VAT information exchange system is to record all interstate transactions, primarily to check evasion.

As per the consensus achieved in the Empowered Committee, recommended VAT rates are three, viz., 1 per cent, 4 per cent and 12.5 per cent. While, the 1 per cent rate is applicable to jewellary, the 4 per cent rate is applicable to inputs and some items of basic necessities, the 12.5 per cent rate is argued to be the RNR applied to residual commodity group. Very recently, the states have finalised the commodity specific VAT rates. States have agreed on 4 per cent VAT rate for 250 items including agro products and manufacturing inputs, while 217 items will attract 12.5 per cent tax rate. It is important to note that the estimated revenue neutral rates (RNRs) across states vary widely. The RNR vary from 11 per cent in Haryana to 18.5 per cent in Madhya Pradesh. Among other reasons, like the differences in tax base, the estimated RNRs vary due to differences in methodology of the RNR estimation and quality of the database used for the purpose (Rao: 2003). However, the variations in RNR are obvious given the differences in tax base across states and the structure of the state economy.

While a three rate structure, as evolved, is a vast improvement over the multiplicity of rates that prevailed earlier, still there is some confusion as to whether the general rate is meant to be only a floor or a uniform rate to be adopted by all states (Bagchi: 2004). As mentioned, there cannot be single RNR in VAT, which will collect the same amount of revenue as under sales tax system for all the states. State-specific revenue neutral rates have to differ due to the differences in tax base of individual states. Thus, one is unclear whether 12.5 per cent rate, which is termed as RNR, is actually revenue neutral for each state. If not, then this rate at the most can be treated as a floor rate below which individual states should not tax a defined basket of commodities, but should be able to tax these items above the floor rate to bring in revenue neutrality if not revenue gain. The confusion arises from the use of the term 'uniform floor rate' in this context and adoption of 12.5 per cent rate as the basis for computing revenue loss in all states (Bagchi: 2004). The states have agreed to phases out the central sales tax by bringing it down from 4 to 2 per cent in the first year and then to 1 per cent in the second year and complete phasing out by the third year.

Another issue in VAT design needs mention here is that there are selected items currently under sales tax kept outside the VAT. These items are diesel, petrol

and ATF, crude oil and liquor. Exclusion of services, from the VAT base is another major weakness of the evolved VAT design. Exclusion of services from the base, even if the states are empowered to tax selected services on a standalone basis, would not eliminate the problem of cascading from the tax system (Rao: 2004). Exclusion of services from the base also discriminates goods against services and has given rise to serious problems in separating out the service component in sale of goods taking place in several instances, e.g., in the case of execution of works contracts, services of food in restaurants and so on (Bagchi: 1997).

In VAT regime, full input tax rebate will be given to local inputs used for the purpose of local sales, taxable inter-state sales and exports. The states have also agreed to give partial input tax rebate to branch transfers/ consignment sale. The proposed rebate would be over and above 4 per cent of the tax used for inputs. It has also been proposed that tax on capital goods will be rebated over three years. In the proposed VAT regime additional excise duty items, viz. textile, tobacco and sugar will be subjected to state taxation and also for other declared goods there will be multi point taxation. It has also been proposed that states would provide transitional relief for sales tax provided to such goods held as stock on the day of implementation of VAT. Within this design, the Government of India has agreed to provide compensation if there is any loss on account of the introduction of VAT. In the first year, the compensation will be 100 per cent, the second year it will be 75 per cent and in the third year it will be 50 per cent.

A close look at the VAT design reveals that it suffers from the similar deficiencies, which characterises the existing sales tax system. In a developing country like India, if tax system reform were to be revenue neutral, if not yielding more revenues, and at the same time the decision of economic agents were not to be needlessly interfered with, there is no alternative but to design a system whereby domestic consumption could be taxed comprehensively with a wide base covering goods and services, but without giving rise to complexities and inefficiencies that mark the existing structure (Bagchi: 1997). As mentioned, in the present VAT design, service tax remains outside the VAT. Also, differential tax rates on input and output are not justified in a properly designed VAT.

As is well known, the basic objective of the tax system is to make it neutral to trade and business decision, externally and internally. This cannot be done even within the existing VAT design unless steps are taken to eliminate CST. With CST, tax exporting and non-neutrality with all their ill effects on economic efficiency and inter-jurisdictional equity will persists (Bagchi: 1997). The proposal of the Empowered Committee is to give credit to tax paid only on intra-state sales and purchases and this will only result in some sort of 'intra-state VAT' with provision for input tax credit only on intra-state trade which will only cause trade diversion-not creation, and therefor is welfare reducing (Rao: 2003). Revenue loss apprehension appears to be the main reason for the roadblock to the removal of CST and the consequent provision of input tax credit. Hopefully, the CST will be eliminated as envisaged in the VAT design from the third year from the introduction of VAT.

A theoretical justification of the rationale for central government compensating VAT induced revenue loss could be two: (i) the positive externality argument and (ii) the balancing of unequal loss across states due to differences in their tax structure. The positive externality argument emanates from the fact that introduction of VAT will eliminate the inequality which, current internal trade taxation gives rise to and also would help reducing economic distortions and inefficiency in economic decision making and resource allocation[4]. As, the positive externality of introduction of VAT would benefit the economy as a whole, centre with better command over resources should compensate the resultant revenue loss. However, the desired outcome of VAT will be manifested in its appropriate form when CST will be eliminated. The second argument for compensation arises from the fact that tax structure of states is different due to the differences in the manufacturing base across state and correspondingly the resultant revenue loss will be different which needs to be compensated by the centre so that horizontal inequality does not accentuate further. A study of VAT in Chinese provinces by Ahmad E., Raju Singh and Benjamin Lockwood (2004) also observed that VAT reform did not affect all the provinces uniformly. The study further noted that move to a VAT particularly affected provinces where industry represents a large share of their economic activity.

Poor provinces where agriculture is still pre-dominant and richer provinces where services have taken a growing role would be less affected.

As mentioned earlier, whether there will be any revenue loss on account of the introduction of VAT, one needs to point out what are the possible sources of revenue loss. The possible sources of revenue loss and gains are many and thus the issue of determining the compensation is a complex one. The primary apprehension about revenue loss arises on the full and comprehensive input tax rebate that has to be provided to local input purchase, loss on account of interstate sales or CST loss due to rate reduction and the full input tax rebate thereon, partial input tax credit on branch transfers and consignment sales and exports and transitional loss. At the same time there will be revenue gains arising out of taxing value addition at every stage of production. Secondly, as per the national consensus on VAT design, the states would be beneficiary of the taxing of AED items, namely, textiles, tobacco and sugar which will provide them revenues to offset a substantial portion of the loss that may arise due to CST loss and on account of input tax credit. Also, there will be revenue gains due to the multi-point taxation of declared goods. Ultimately, the estimation of revenue loss needs to be adjusted against the revenue gains VAT would possible generate.

II. Estimation of Base: Theoretical Issues

An exercise of this nature, requires an estimation of correct base for VAT, which in any form of taxation is the key for the measurement of tax potential. Theoretically, the applicable base of a value added tax depends on a number of factors related to its design, e.g., whether it is origin or destination based, of the income or consumption type, implemented with a credit invoice or subtraction method and contains many or few exemptions. The most widely accepted form of the VAT is a destination based, consumption type system implemented with a credit invoice method. As mentioned, the states in India also agreed to implement the similar system of VAT in their respective states.

[4] The economic impact of commodity taxation, though not fully quantified, an analysis of its impact on economic decision making is analysed by (Bagchi: 1997), (Rao:1993), (Rao and Vaillancourt:1994,

The starting point for the estimation of VAT base is the gross domestic product of an economy, in the case of states the gross state domestic product, since it represents the sum total of the value added in the production of goods and services within a state economy. However, for a destination based consumption type VAT, the legitimate question that arises is whether final consumption expenditure, which represents the sum total of value added of domestic consumption is not a more direct starting point in estimating the VAT base. It depends to a large extent on the scope and the nature of exemptions of the VAT under consideration. For a destination based consumption type of VAT levied comprehensively with no exemptions, the base is simply the final consumption on goods and services.

Generally, there are three alternative methods of estimating base of VAT, viz., GDP adjusted for exports and imports, the consumption expenditure and the taxable turnover of sales tax. GDP adjusted for external sector transactions would represent the total expenditure on private consumption, government consumption, fixed capital formation and changes in business inventories. The estimated GDP adjusted for the value of services of exempted sector, government wages, fixed capital formation and net consumption abroad would precisely define the VAT base. Although GDP data is available from the national account statistics, it is very difficult to get disaggregated data on exempted sectors and on value of goods and services to be excluded from VAT base. Use of GDP, thus as VAT base becomes problematic even at the national level VAT calculation. It becomes even more difficult in the case of states as there is no reliable data available on exports and imports from the states apart from the items to be excluded from the estimation of VAT base within the exempted sector from the state GSDP.

Another alternative, which can be used as the base of the VAT, is the consumption expenditure. The consumption expenditure data is available at the state level as well as at all India level. The state specific consumption expenditure data can be used as a proxy for the base of VAT. The aggregate private consumption expenditure data for the country as a whole is provided by the National Accounts Statistics (NAS). State wise consumption expenditure data also on 5 yearly basis is

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NIPFP: 1994).

available from national sample survey. This method of estimating VAT is called consumption expenditure approach. However, the consumption expenditure method is not free from limitations, primarily due to the non-availability of data on exempted commodity consumption and exemption of dealers with turnover below the taxable limit. Given these information, one can estimate the VAT revenues of individual states through consumption expenditure approach.

It is possible to estimate VAT revenues through "tax turnover" method. Advantage of tax turnover method is that it is based on the data of taxable turnover of goods available with the respective sales tax department of states. However, taxable turnover data, includes the intermediate inputs as well. As under VAT, tax paid on input by a VAT registered dealer would have to be rebated, one has to estimate the inputs eligible for input tax rebate from the tax turnover data. It is also to be noted that inputs eligible for credit will be the taxable inputs alone. Thus, one has to determine not only the input component from the taxable turnover, but also the structure of input used, viz., taxable input and non-taxable/ exempted inputs. Another issue that requires attention is the quantification of locally produced inputs and the use of imported inputs within the taxable inputs. As per the contemplated VAT regime, locally produced inputs will be eligible for input tax credit. Of course within a full fledged VAT regime, full input tax credit will be given irrespective of the origin of input. A mechanism of such a system of transfer of input tax credit is yet to evolve in the implementable VAT design in India[5].

As it is well known, taxable goods produced within a state is sold via (i) local sales, (ii) taxable inter-state sales, (iii) consignment / branch transfers and (iv) international exports. In the present system, data available with the sales tax department of states, though provide commodity wise / dealer wise data on general sales tax and central sales tax, it is difficult to obtain disaggregated data on exports and consignment / branch transfers from the state.

[5] The standard treatment of inter-state trade or export under destination based VAT is zero rating. Another alternative, which the European Commission first proposed in the early 1990s is to replace zero rating by full tax at the same rate as domestic sales, with a credit then available against the output tax in the importing country through a 'clearing house' mechanism. Through this mechanism revenue would effectively be reallocated across provinces so as to preserve the same allocation of revenues under zero rating.

Apart from this, taxable turnover data suffers from several other deficiencies. As the taxable turnover data pertains to first point sales in most of the states, it excludes the trade margin added in the subsequent sales by wholesalers and retailers. In other words, when one is contemplating a VAT regime, which by nature is a system of multi-point taxation, one has to make suitable assumptions with regard to the trade margin in the subsequent stages of value addition for which no hard data is available. Also, the trade margin / value addition differs across commodities. Thus, in the absence of detailed information, it is difficult to estimate the precise revenue gain from taxing of value addition in the subsequent stages of transactions.

It is also to be noted that it is difficult to obtain state specific consumption data on additional excise duty items, viz., textile, tobacco and sugar-as these items are subject to sales tax under the tax rental arrangement with the centre. Thus, one needs to estimate the state specific base of these taxes and then arrive at the revenues from these goods for a particular state with the applicable VAT rates. It also may be noted that taxable turnover excludes all exempted turnovers and also the turnover of dealers below the threshold limits under the current sales tax system in the states. However, in the calculation of VAT base, further deduction needs to be made in the turnover data in which dealers who will remain below the threshold limits under the new VAT regime. In the present study, among the three methods discussed above, we have used the last method, viz., tax turnover method for the estimation of VAT revenues and the input tax credit based on the data obtained from the respective commercial tax departments of Andhra Pradesh and West Bengal.

III. Methodology of Estimation of VAT Revenue and Input tax credit

The methodology for the estimation of VAT revenues and the quantum of input tax credit is delineated below.

$$G_t = L_{st} + C_{st} + X_t + B_t \qquad (1)$$

Where

$G_t = GrossTurnover$

$L_{st} = Local\ Sales\ Turnover$

$C_{st} = Central\ Sales\ Turnover$
$X_t = Exports\ \ from\ the\ State$
$B_t = Branch\ Transfers$
$L_{st} = G_t - O_{st}$ (2)
$O_{st} = C_{st} + X_t + B_t$

$O_{st} = Sales\ Outside\ the\ State$

The input component in the local sales turnover is
$I_{cc} = \alpha \times L_{st}$ (3)
Where $\alpha = \frac{I}{O}$, $I = Input, \quad O = Output,$

In case of a group of commodities, α is the input coefficient vector. It is to be noted that total input can be decomposed between taxable and non-taxable input. The input tax will be applicable in the case of taxable input. In other words

$I_\alpha = I_x + I_T$ (4)
Where $I_X = Exempted\ \ Input, I_T = Taxable\ Input$

The input tax in turn would be

$I_t = i_t \times I_T$ (5)
where, i_t is the rate of tax on input

Subtracting equation (5) from equation (2) we get the taxable local turnover as the VAT base free of any input tax.

$V_t = L_{st} - I_t$ (6)

The VAT revenues would be

$V_R = V_t \times v_r$ (7)

where $V_t = VAT\ \ Base, V_R = VAT\ \ \text{Re}venues, v_r = VAT\ \ Rate$

Estimation of Input Tax Credit

Before we proceed further, it is to be mentioned that under the current VAT design, though revenues would be collected from the local sales and also CST at 2 per cent, tax rebate would have to be given to local purchase of taxable inputs used for the

production of taxable commodities irrespective of whether they are sold locally or outside the state. In other words, local inputs eligible for input tax credit has to be estimated not only on the local sales but also on inter-state sales, consignment/branch transfers and exports. Thus, it has to be on the gross turnover defined in equation (1). Following the methodology adopted in the calculation of input tax component for N_t , we estimate the input tax component for C_{st}, X_t and B_t.

$$I_{xt} = X_t \times \alpha \times I_{XT} \times i_t \quad (8)$$

$$I_{cst} = C_{st} \times \alpha \times I_{csT} \times i_t \quad (9)$$

$$I_{bt} = B_t \times \alpha \times I_{bT} \times i_t \quad (10)$$

Where,

$I_{XT} = Share\ of\ Taxable\ input\ \ for\ \exp ort\ turnover$

$I_{csT} = Share\ of\ Taxable\ input\ \ for\ central\ sales\ turnover$

$I_{bt} = Share\ of\ Taxable\ input\ \ for\ branch\ transfers$

Deducting equation (8), (9) and (10) from X_t, C_{st} and B_t respectively, we obtain their turnovers net of input tax. Total gross turnover without input tax is

$$G_t^{'} = V_t + C_{st}^{'} + X_t^{'} + B_t^{'} \quad (11)$$

In estimating the value of inputs qualifying for VAT rebate, it should be remember that no input tax rebate is given to inputs relating to turnover of importers, inputs procured from outside the state and exempted inputs. Thus, rebate would be available for the inputs produced locally in manufacturing taxable goods for the purpose of local sales as well as sales outside the state including exports. Given this condition, we assume that the share of importer's turnover is β. Conversely, the turnover excluding that of importer is the following:

$$G_t^{''} = (1-\beta) \times G_t^{'} \quad (12)$$

Again for the estimation of local input purchase, we apply the input-coefficient vector α to obtain the total input component in the turnover excluding importer's turnover and further adjust the local inputs by subtracting the exempted inputs. The remaining taxable input is again adjusted for the input purchase from outside the state. The remaining amount obtained is eligible for input tax credit, which

by multiplying the corresponding tax rates for inputs we have obtained the input tax credit to be given under a VAT regime for local input purchase.

IV. Interpreting Data and Estimation of VAT Revenues

Given the time constraints and the data intensive work involved in this kind of exercise the study concentrated on two states, viz., Andhra Pradesh and West Bengal. The data obtained from the Commercial Tax Department of Andhra Pradesh consists of commodity wise data on sales tax collection under APGST for two hundred and twenty commodities. We also have collected detailed data of turnover and tax paid by 1488 dealers. Detailed information of these dealers are used to obtain various parameters used for this study. However, in case of West Bengal, such disaggregated level of data on turnover was not available. We have obtained the data on commodity wise tax collection under general sales tax of West Bengal. The turnover is obtained by multiplying the corresponding effective tax rates with the tax collection.

In both the states, the general sales tax (GST) act and central sales tax (CST) act govern operation of sales tax. The former deals with the taxation of intrastate sales and the latter deals with the taxation of interstate sales. In both the states tax is charged at the first point of sale. However, in Andhra Pradesh, already there are 23 commodities under VAT and in West Bengal also, roughly same number of commodities are subject to double point taxation. In Andhra Pradesh, the amount of revenues collected under VAT in the year 2002-03 was Rs. 47.5 core which as a percentage of total sales tax revenue was 0.57 per cent. Another characteristic of the sales tax system in Andhra Pradesh is the application of turnover tax at the rate of 1 per cent. Before we go into the details of the estimation of compensation, an idea of the structure of sales tax and the rate structure is given in Table 1 and Table 2. It can be seen from the Table 1 that the tax collected under the central sales tax is steadily declining in both the states. In Andhra Pradesh, the share of tax collected under CST declined from 15.91 per cent in 1990-91 to 7.89 per cent in 2002-03. However, in case of West Bengal, the share of CST declined from 22.21 per cent to 12.48 per cent during the same period. It is to be noted that between the two states, the contribution

through CST in total sales tax is relatively higher in case of West Bengal compared to Andhra Pradesh.

Table 1: Structure of Sales Tax in Andhra Pradesh & West Bengal

(Per cent)

	Andhra Pradesh		West Bengal	
	GST	CST	GST	CST
1990-91	84.09	15.91	77.79	22.21
1991-92	84.20	15.80	78.80	21.20
1992-93	82.59	17.41	79.75	20.25
1993-94	84.34	15.66	81.33	18.67
1994-95	82.92	17.08	80.93	19.07
1995-96	82.38	17.62	80.70	19.30
1996-97	84.70	15.30	81.30	18.70
1997-98	89.06	10.94	82.22	17.78
1998-99	90.46	9.54	83.57	16.43
1999-00	91.41	8.59	83.97	16.03
2000-01	91.22	8.78	84.68	15.32
2001-02	92.06	7.94	86.15	13.85
2002-03	92.11	7.89	87.52	12.48

Note: GST = General Sales Tax, CST = Central Sales Tax

Source (Basic Data): Commercial Tax Department, Government of Andhra Pradesh And West Bengal

The rate structure of the sales tax shown in Table 2 reveals that the number of rates in Andhra Pradesh, under the existing sales tax rate structure are much less compared to West Bengal. Rate specific composition of turnover and corresponding contribution to total revenues reveals that in Andhra Pradesh, corresponding to 4 per cent rate of tax, 50.88 per cent of the turnover is concentrated and their contribution to total revenues is 29.54 per cent. In West Bengal also the highest concentration of turnover is at 4 per cent rate and their contribution to total revenues is 15.56 per cent. In Andhra Pradesh, the second highest revenue contribution comes under 8 per cent rate, followed by 16 and 12 per cent. In West Bengal, however, the highest contribution of revenues comes under 10 per cent rate, followed by 4, 12 15, 8, 8.5 and 17 per cent. The contribution to total taxes under other rates is minimal in both the states. It is to be noted that this rate structure excludes the rates applied to diesel, petrol, ATF and liquor and other rates having insignificant contributions to revenues. The rates under diesel, petrol, ATF and liquor are specifically kept outside the analysis because they are not going to come under VAT under the present VAT dispensation.

Table 2: Sales tax Rates, Corresponding Turnover and Contribution in Tax Revenues

Tax Rates (in per cent)	Rate specific taxable turnover (in per cent)	Contributions to total revenues (in per cent)
Andhra Pradesh		
1	2.08	0.30
4	50.88	29.54
8	22.04	28.48
10	6.07	8.30
12	9.02	11.39
15	0.54	1.13
16	8.01	18.27
20	1.37	2.58
West Bengal		
1	2.93	0.40
2	3.32	0.81
3	0.12	0.05
4	31.09	15.56
4.8	1.97	1.11
5	2.75	1.86
7	2.44	2.32
7.5	1.61	1.43
8	11.52	10.82
8.5	5.13	5.92
10	18.75	25.36
12	8.55	13.88
15	6.70	13.57
17	2.69	5.72
20	0.44	1.19

Source (Basic Data): Commercial Tax Department, Government of Andhra Pradesh & West Bengal

As these commodities (diesel, petrol, ATF and liquor) will remain outside the VAT, their contribution to total revenues of the state will remain unchanged even when the VAT is introduced. In other words, if the weightage of these taxes are higher in the total tax, revenue contribution to be affected by introduction of VAT will be lower. If the average rate in these few commodities are very high in a particular state vis-a-vis, average rate of sales tax, the average rate of sales tax excluding these items will be much lower. Accordingly, other things remaining constant, the possibility of revenue gain / loss will be higher in a VAT regime depending on differentials between the average rates of sales tax excluding the rates applied to non-vatable items and the weighted average rates of vatable commodities.

Table 3: Rate Structure of Selected Non-Vatable Commodities and their Contribution to total Revenues: 2002-03

(Per cent)

	Andhra Pradesh		West Bengal	
	Tax Rate	% Contribution in revenue	Tax Rate	% Contribution in revenue
Petrol	30.55	8.14	20	5.72
Diesel	19.33	16.91	12.55	17.77
ATF	30.55	0.18	25	1.85
Liquor	70	20.15	28	4.82
Total	28.03	45.37	15.42	30.16

Source (Basic Data): Commercial Tax Department, Government of Andhra Pradesh & West Bengal

A comparative picture of rate structure and contribution of these non-vatable items, viz., petrol, diesel, ATF and liquor in total sales tax revenues of both the states are given in Table 3. It is evident from the Table that all these items are taxed at a much higher rate in Andhra Pradesh compared to West Bengal and their contributions in revenues is much higher in Andhra Pradesh vis-à-vis West Bengal. The average rate of tax in these items is as high as more than 28 per cent in Andhra Pradesh and the same is 15.42 per cent in West Bengal. Thus, when one is talking about VAT revenues and the attendant issue of compensation, it is applicable only to 55 per cent of the sales tax revenues of Andhra Pradesh and around 70 per cent of the sales tax revenues of West Bengal. The estimated average rate of tax being 8.5 per cent in both the states, the average of rates of sales tax in vatable items is much lower in Andhra Pradesh compared to West Bengal. In other words, other things remaining constant, rate adjustment under VAT should ideally provide higher revenue gains in Andhra Pradesh compared to West Bengal and correspondingly the proportional loss should be much lower in Andhra Pradesh compared to that in West Bengal. However, the quantum of loss would also depend on the input component eligible for input tax credit in the total input in individual states. If the local input component used for local manufacturing is higher, the inputs qualifying for input tax credit will be higher and correspondingly revenue gains will be lower.

As mentioned, one of the key components in the estimation of compensation is the estimation of input tax credit. In order to arrive at the input component in the taxable turnover we have used the all India input coefficient matrix obtained from the 1993-94 input-output table published by CSO. Use of 1993-94 input-output table in the absence of updated one may not truly reflect the actual input intensity of a

particular commodity. However, it is also to be noted that if there is structural change in the commodity composition of output arising due to efficiency gain because of higher competition in the new economic environment, the input coefficient will be lower if recent input coefficient were available, which means higher value addition. Thus, the use of 1993-94 input-output table does not under estimate the input component and correspondingly the input tax credit. In fact, the use of 1993-94 input output table tends to over estimates the input component and thereby the input tax credit. One of the limitations of this exercise is that in the absence of an updated input output table, the estimation of input tax credit suffers from an upward bias. In practice, the actual input tax credit may be lower than estimated in this exercise.

It is also to be noted that the input coefficients could be either a global ratio, sector specific one or commodity specific. Earlier studies on the estimation of input component used a global ratio instead of sector specific or commodity specific coefficients (Aggarwal and Narayana: 1995, Aggarwal: 2002, Aggarwal: 2003). The application of global ratio to arrive at the input component would provide spurious estimates of input component. A closer look at the input coefficient matrix revealed that input coefficients differ across commodities widely. If we classify the input coefficient matrix into three broad categories, viz. primary, secondary and tertiary sectors, the corresponding input coefficients works out to be 0.25, 0.68 and 0.33 respectively. Also, there are large intra-group variations within these three sub sectors. Given these large variations in input-coefficients across commodities, this study deviated from the earlier studies by not adopting a global ratio for the calculation of input components from the commodity wise taxable turnover data. Instead, commodity specific input coefficient vector is applied to estimate the input component through a systematic commodity mapping from the input coefficient matrix of 115 commodities available in 1993-94 input-output table against taxable turnover of 220 and 163 commodities for Andhra Pradesh and West Bengal respectively. Through this method, input component in total taxable turnover works out to be 57.61 and 60.42 per cent for Andhra Pradesh and West Bengal respectively. As these two ratios are much higher than the aggregate input-output ratio of 48 per cent reported in 1993-94 input-output table, inputs that will be eligible for input tax credit will be much higher in this method.

Having obtained the input component, we have estimated the share of exempted input in the total input. Again this ratio obtained from the input-output table works out to be 9.81 per cent. In other words, the share of taxable input in total input is more than 91 per cent. As per the present VAT dispensation, only the local inputs will be eligible for the input tax credit. Thus, a precise estimate of local input purchase is essential for the determination of input tax credit. As mentioned earlier, for the state of Andhra Pradesh, we have obtained detailed information with regard to the turnover of 1488 dealers for the year 2000-01. Among others, the data obtained comprises of total input purchase from and outside Andhra Pradesh, purchase in the course of interstate against C-Form and also against F-Form. The data on total sales both inside and outside Andhra Pradesh is also obtained from these details. Based on these information, local input purchase works out to be 41.96 per cent in case of Andhra Pradesh. Local input purchase works out to be 35 per cent in case of West Bengal. In case of West Bengal, although we did not have dealer wise information, the commodity wise data on import was obtained from which the non-vatable items of import were deducted.

This input component is again adjusted for exempted inputs. Having obtained the taxable input we have arrived at the quantum of input tax credit to be given in the VAT regime for the general sales tax. Similar exercise was repeated for the estimation of input tax credit for CST, consignment transfers and exports. We have been able to obtain information on exports from the commercial tax department of Andhra Pradesh for the year 2001-02, which amounted to Rs. 11,358 crore. Based on the discussion with the CTD officials, we have applied a growth rate of 18 per cent per annum to obtain the export volume for the year 2002-03. Though the estimation of input tax credit for CST and exports were straightforward, the estimation of the same for consignment transfers required further adjustment. As per the VAT design, in case of consignment transfers, a registered dealer shall not be eligible for input tax credit unless the amount of tax on such turnover of purchases exceeds the amount calculated at the rate of four percent or applicable rate of tax, which ever is lower, and the amount of input tax credit shall be calculated at such rate which exceeds four percent or applicable rate of tax, as the case may be. Based on this principle, input tax credit is estimated accordingly for the consignment / branch transfers.

Another aspect of VAT revenue estimation is the estimation of revenue gain due to multistage taxation. Thus, to obtain additional revenue gain we have estimated the subsequent stages of value addition by adding trade margin. As per the notification issued under Central Excise Act[6] for assessment of goods on the basis of retail sale price (MRP), commodity wise abatement as a percentage of retail sales price ranges between 35 to 50 per cent. Retail sale price as per the notification implies the maximum price at which the excisable goods in packaged form may be sold to the final consumer and includes all taxes, freight, transport charges, commission payable to dealers and also charges towards advertisement, delivery, packing and forwarding as the case may be.

Given this abatement rate based on the definition of retail sale price, a trade margin of 10 per cent at the second point and further 10 per cent in the last stage is applied to estimate the additional revenue gain from value added which, as evident from the abatement rate, is a highly conservative estimate of value addition. The estimates of value added is not that of all the commodities in all stages of transaction, but particularly to those items in which under the VAT regime applicable rate will be 12.5 per cent. This is particularly done to avoid value addition on those items, which are used for intermediate consumption. However, in the case of intermediate goods, it is assumed that there will be value addition at least at one stage and in that the margin of value addition is assumed even lower at 5 per cent.

Certain other components requiring quantification for the estimation of revenue loss / gain are the following: (a) the quantum of AED revenues (adjusted for central transfers) if the state levy taxes on textile, tobacco and sugar, (b) loss due to the abolition of turnover tax, (c) loss on account of the increase in turnover threshold to above Rs. 3 lakhs in Andhra Pradesh and Rs. 5 lakhs in West Bengal and (d) the quantum of transitional relief to be given to the manufacturer / dealer for sales tax provided to such goods held as stocks on the day of implementation of VAT.

[6] Notification number 13/2002-C.E. (N.T.) dated 1.3.2002 and their subsequent amendments (central Excise Manual with Service Tax 2004-05, 37th Edition).

Like any other revenues, estimation of state specific tax base for textile, tobacco and sugar is a must for the estimation of revenues that the state can generate by levying taxes on these commodities. However, in the absence of published data, it is not possible to obtain the state specific tax base of these commodities. However, the data on final consumption of these commodities at national level is available from the national account statistics except for sugar. The consumption data reported in national accounts statistics includes the consumption of both sugar and gur. Thus, assuming the total consumption of sugar and gur at a ratio of 65: 35 we have arrived at the total consumption of sugar (Aggarwal and Narayana:1995). Having obtained the national level per capita consumption, we have multiplied per capita consumption of sugar and textile with the respective state population to obtain the total consumption in the state. But in the case of tobacco consumption, such an exercise was not possible as tobacco is consumed by a subset of the total population within a state. Thus, to arrive at an appropriate base of tobacco consumption, we have estimated the total tobacco consuming population in the state of Andhra Pradesh and West Bengal based on a study conducted by World Bank (1999). This study provides the estimate of tobacco consuming population above the 0-15 age groups in different regions across the World. According to these estimates, in East Asia and Pacific region 59 per cent of the male and 4 per cent of the female in the residual age group consumes tobacco. However, as we do not have a data on the age group below 0-15 from the census, we have deducted the 0-14 age group of population from the total population of respective states of Andhra Pradesh and West Bengal and applied the corresponding ratios for tobacco consuming male and female in the East Asia and Pacific region to arrive at the estimates of tobacco consuming populations in the respective states. Having arrived at the estimates of tobacco consuming population in these two states, we obtained the consumption of tobacco in the respective states. On the basis of the above estimates we have obtained the total revenues these two states can possibly collect if sugar and textiles are taxed at 4 per cent and tobacco is taxed at 12.5 per cent. This revenue is adjusted for the possible revenue loss on account of the reduction in AED transfers from the centre in lieu of sales tax.

We have obtained information on the amount of loss due to the abolition of turnover tax and estimated the loss on account of the increase in the threshold limit of

VAT above Rs. 3 and 5 lakhs in both the states by deducting the total tax collected currently from the dealers having turnover upto Rs. 3 lakhs and 5 lakhs. This works out to be Rs. 56 crore in the case Andhra Pradesh and Rs.48.77 crores in the case of West Bengal for the year 2002-03.

Having obtained separate estimates of all these components, we have arrived at the estimates of revenues that the state will mobilise, if the proposed VAT design is implemented. It can be seen from the Table 4 that the third point VAT revenue will be Rs. 5716.4 crore in case of Andhra Pradesh and Rs. 3242.5 crore in West Bengal. By subtracting the components of revenues that will be given as set off and various other losses states will incur, viz., transitional loss, loss on account of abolition of turnover tax, increase in the turnover threshold we obtain the net VAT revenues. Adding the CST revenues at the rate of 2 percent estimated on the base free of input tax and the additional excise duty gain (adjusted for central transfers) with the net VAT revenues, we obtain the aggregate revenues in the proposed VAT regime. The estimated VAT revenue when deducted from the revenues obtained under GST and CST we get the net revenue gain / loss for individual states. In case of Andhra Pradesh, total loss works out to be Rs. 106.5 crore and Rs.123.7 crore for West Bengal.

Table 4: Estimates of Compensations: 2002-03

(Per cent)

	Andhra Pradesh	West Bengal
Sales Tax Revenues (a+b)	***8337.8***	***4191.51***
a. GST	7680.0	3668.41
b. CST	657.8	523.10
Revenues outside VAT	***3219.1***	***855.55***
Vatable GST Revenues	***4460.9***	***2812.86***
VAT revenue at the first point	4930.0	2786.67
VAT revenue at the second point	5324.0	3014.99
VAT revenue at the third point	***5716.4***	***3242.45***
Deductible items from the VAT revenues	***1202.2***	***506.41***
Input tax credit on intra-state sales	473	197.3
Input tax credit on inter-state sales	125	87.87
Input tax credit on exports	107	39.54
Input tax credit on consignment sale	68.47	41.40
Transitional relief	176.16	91.53
Loss of turnover Tax	42.1	-
VAT Rev. Loss	47.5	-
Loss due to increased turnover threshold	56	48.77
Net VAT Revenues	***4514.2***	***2736.04***
CST Revenues at the rate of 2 per cent	305.7	254.9
AED Revenues adjusted for Transfers	192	221.2
Total Revenues (VAT+CST+ AED)	5012.2	3212.8
Revenue Gain (+) / Loss (-)	-106.5	-123.7

Source (Basic Data): Commercial Tax Department, Government of Andhra Pradesh & West Bengal

As both the states are having a revenue loss, it is imperative to estimate state specific revenue neutral rates. The estimated revenue neutral rates can be obtained by dividing revenue yield under VAT adjusted for revenue loss / gain with the third point / final VAT base. RNRs under various alternative scenarios are given in Table 5. The revenue yield and base considered for the RNR calculation differs across scenarios. In the first case, revenue comprises of revenues under GST and CST (at the rate of 2 per cent), the base being the estimated third point VAT base. In an alternative scenario, when CST will be eliminated, the tax base remaining constant, there will be a higher demand of revenues from the same base, which will in turn increase the RNR.

In the second case, if the AED revenues and AED base are added with the existing revenue yield and base in the scenario I, we get another set of RNRs, which is lower than that of scenario-I. In other words, if the AED items are also taxed at the revenue neutral rates, the RNR will be lower.

Table 5: Estimated Revenue Neutral Rates

(per cent)

	Andhra Pradesh	West Bengal
RNR Excluding AED Revenue and Turnover		
General RNR		
RNR (Vatable GST + CST)	8.1	10.6
RNR if CST is eliminated	8.6	11.4
Specific RNR		
RNR (Vatable GST + CST)	13.0	13.6
RNR if CST is eliminated	14.0	14.8
RNR Including AED Revenue and Turnover		
General RNR		
RNR (Vatable GST + CST)	7.4	8.6
RNR if CST is eliminated	7.9	9.2
Specific RNR		
RNR (Vatable GST + CST)	12.9	13.4
RNR if CST is eliminated	13.9	14.5

Source: Commercial Tax Department, Government of Andhra Pradesh & West Bengal

The single RNR across three defined sets of commodities taxed at 1 per cent, 4 per cent and 12.5 per cent works out to be 8.1 per cent in Andhra Pradesh and 10.6 per cent in West Bengal, in scenario-I, when CST is levied at 2 per cent. When CST is eliminated, the single RNR on these three defined set of commodities works out to be 8.6 and 11.4 per cent in Andhra Pradesh and West Bengal respectively. However, as the items taxed at the rate of 4 per cent are mainly intermediate goods and some items of basic necessities, which under the present VAT dispensation cannot be taxed at a higher than the prescribed rate of 4 per cent, the RNR needs to be estimated on the aggregate taxable base of commodities to be taxed at the rate of 12.5 per cent. The RNR works out to be 13.0 per cent and 14.0 per cent for Andhra Pradesh both with CST and without CST respectively. In case of West Bengal, the same works out to be 13.6 and 14.8 per cent respectively. As evident form the Table 5, RNR will be marginally lower when AED revenues and base comes under tax and tax base.

V. Projection of Revenues

On the basis of the estimated VAT revenues and the revenue loss for the year 2002-03, we require estimating the loss or gain of revenue in the medium term, i.e, for the period between 2004-05 and 2009-10. As we have made our estimates with

respect to the year 2002-03, the same year is considered as the base year of projection for both the states under alternative projection scenarios.

Observed GST Buoyancy Based

The first step in the estimation of projection of gain or loss is the estimation of medium term profile of sales tax revenues that states could possibly mobilise, if the existing sales tax regime continues. The second step is to estimate the profile of VAT revenues, the revenues under CST and AED and also the profile of deductible items from the VAT revenues.

The projected profile of GST for both the states are obtained by estimating the observed buoyancy of vatable GST items for the period between 2000-01 to 2003-04. The estimated buoyancy works out to be 1.10 for Andhra Pradesh and 0.90 for West Bengal. For CST, we have estimated the buoyancy for a longer time series data from 1993-94 to 2002-03 in a double log specification. These buoyancies work out to be 0.417 for Andhra Pradesh and 0.345 for West Bengal. Based on the observed buoyancy of GST and CST, we have estimated the buoyancy based growth rates of these two components of taxes. For the period between 1993-94 and 2002-03, the trend rates of growth of GSDP were 11.99 and 13.85 per cent for Andhra Pradesh and West Bengal respectively. Applying the same growth rate, we have obtained the profile of GSDP of both the states for the period between 2003-04 and 2009-10.

Applying the buoyancy based growth rates of GST and CST on the base year 2002-03, we have estimated the profile of sales tax revenues from 2004-05 to 2009-10. The profile of third point / final VAT revenues is arrived at by applying the same buoyancy as that of applied in the case of Vatable GST. For the estimation of CST revenues under VAT, we have first estimated the turnover of CST from the projected CST profile. Then estimated the input tax component in the projected turnover based on the methodology discussed in section III. Deducting the input tax component from the turnover we obtained the net turnover of CST without input tax for the projected period and corresponding CST revenues at the rate of 2 per cent. AED revenues are assumed to remain constant as a percentage of GSDP of respective states during the period of projection.

Finally, in order to arrive at the net VAT revenues we need to adjust the revenues downward for the input tax credit and other deductible items. The total deductible items in the base year constituted around 22 per cent of the third point VAT revenues in Andhra Pradesh and 16 per cent in case of West Bengal. We assume that this ratio will remain constant throughout the projection period. If we deduct these items from the projected third point / final VAT revenues, we obtain the net available VAT revenues to the states. The differences between the projected net VAT revenues and the vatable sales tax revenues including CST provides the profile of gain/ loss in the medium term, i.e., for the period between 2004-05 and 2009-10.

Table 6: Projection of Revenues (Scenario I) : 2004-05 to 2009-10

(In Rs. Crore)

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
Andhra Pradesh						
Sales Tax Excluding Non-Vatable Items	**6441**	**7232**	**8124**	**9130**	**10266**	**11549**
General Sales Tax	5716	6470	7324	8291	9385	10623
Central Sales Tax	725	762	800	840	882	926
Net VAT Revenues	**6379**	**7189**	**8104**	**8728**	**9876**	**11175**
Third Point VAT Revenues	7325	8291	9386	10624	12026	13613
CST Revenues	354	371	390	0	0	0
AED Revenues	241	270	302	339	379	425
Deductable Items from VAT Revenues	1540	1744	1974	2234	2529	2863
Loss/ Gain	-62	-43	-20	-402	-390	-374
West Bengal						
Sales Tax Excluding Non-Vatable Items	**4131**	**4602**	**5129**	**5719**	**6381**	**7122**
General Sales Tax	3557	4000	4498	5058	5688	6397
Central Sales Tax	574	602	630	661	692	725
Net VAT Revenues	**4027**	**4511**	**5054**	**5343**	**6015**	**6771**
Third Point VAT Revenues	4100	4611	5185	5831	6557	7374
CST Revenues	280	293	307	0	0	0
AED Revenues	287	326	372	423	482	549
Deductable Items from VAT Revenues	640	720	810	911	1024	1152
Loss/ Gain	-105	-91	-74	-376	-366	-351

It can be seen from the Table 6 that between 2004-05 and 2009-10, the profile of sales tax revenue (excluding non-vatable items) increases much higher than the net VAT revenue in the corresponding period resulting in revenue loss to the state of Andhra Pradesh and West Bengal One of the major reasons for the sharp increase in the revenue loss from 2007-08 onwards is the complete abolition of CST revenues.

VI: Summary and Conclusions

On the basis of the above analysis the major finds of the study are summarized below:

- ✓ Estimates based on the present VAT design do show a revenue loss for both the states. The loss as a proportion to the final VAT revenues is much higher in West Bengal compared to Andhra Pradesh.

- ✓ However, revenue loss in both the states is lower than the loss in CST revenues. In other words, the primary reason for states' revenue loss is due to the downward adjustment of CST rate at 2 per cent.

- ✓ The revenue neutral rates works out to be higher than the proposed VAT RNR of 12.5 per cent. However, RNR in Andhra Pradesh is lower than that in West Bengal.

- ✓ Also, the CST loss may actually be lower than as quantified in this study because a proportion of consignment transfers may be shown as taxable interstate sales, if the transaction cost of the same is lower or equal to the tax paid as CST on those transfers when CST is taxed at 2 per cent.

In conclusion, we emphasis that we cannot have a single RNR for all the states. Across states, RNR has to differ due to the differences in the tax base and the structure of the state economy. Our estimates of RNR, if exercised, should eliminate the revenue loss to the states. However, that will be possible only when states will have the flexibility to fix rate above 12.5 per cent which is not possible in the current VAT design. In this context it should be mentioned that in a recent meeting of the Empowered Committee, the proposal to consider the 12.5 per cent rate as the floor rate is mooted. If that happens, like the VAT in European Commission where the country specific standard VAT rates are different, states in India should also be able to tax at their respective revenue neutral rates. Also it needs to be emphasised that in a VAT regime there is no need to differentiate between input tax and output tax and imports also should come under taxation. Finally, it will not be too optimistic to expect that VAT regime would help broadening the tax base and improve compliance and in turn the revenue loss will be much lower than the estimated one.

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