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ESTIMATION OF TAX LEAKAGE AND ITS IMPACT ON FISCAL HEALTH IN KERALA

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ABSTRACT

This paper is an attempt to analyse the tax leakage in the broader context of fiscal crisis in Kerala, highlighting the relationship between the two. Tax leakage by causing a revenue drain may adversely affect the primary account position and thus may indirectly influence the fiscal sustainability of the state's economy. This is the main thread of argument coming out of the paper. We selected the general sales tax for analysis since it is the major contributor of tax revenue to the state government. The study covers the period of three decades from 1972-73 to 2000-01 for the analysis since the early seventies marks a sudden breakthrough in consumption expenditure in Kerala due to the Gulf boom. We used the Partial Adjustment Model for estimating the tax leakage in Kerala. Our major finding is that almost thirty five percent of the total tax potential of general sales tax is not tapped in the state. Further, this amount of tax leakage is large enough to eliminate the primary account surplus from the economy. In fact, keeping a primary account surplus is a preliminary condition for attaining fiscal sustainability in the economy. Thus, it is clear that the presence of tax leakage in the economy is destroying even the primary condition for achieving fiscal sustainability. However, tax leakage is a factor upon which the state government has a control or in other words, the presence of tax leakage may be considered as a mirror image of the inefficiency of tax administration in the state. Clearly, furtherance in the tax administration may be enough to prevent the proclivity of the deficit indicators to deteriorate in the economy. Such an action may preclude the transformation of fiscal crisis into a larger development crisis of the economy.

1. Introduction

In a federation like India, healthy state finances may be important for ensuring regional balanced development and for launching the entire economy to a higher growth trajectory. The importance of sub national governments often comes from the larger expenditure obligations bestowed upon them. In fact, the role of the state may have undergone a change over the decades and its new role may be the facilitator of economic activities than of a controller of the same[1]. This new role (at least in the context of India), though different in approach to the private parties, may needs huge investments from the part of the government.

In India, as already mentioned, the development of material as well as the human resources rests with the state governments as they may respond to the local needs immediately. In accordance, the public expenditure of the state government is divided into revenue expenditure and capital expenditure. While revenue expenditure includes the expenditure for the functioning of the government, capital expenditure includes long-term public investment on different sectors of the economy, loans and advances by the state government as well as the debt repayments. The capital expenditure may, therefore, be considered crucial for the development of material as well as the human resources in the state. Unfortunately, nowadays, the crowding out of capital expenditure by the overflow of revenue expenditure became pervasive in the different state economies in India. This may impose obstacles in the way of long-term development of the country and hence may need to be addressed with caution.

Why this crowding out of capital expenditure happening in the economy? The answer lies in the indisposed fiscal health of the regional economy. Alternatively, to be more precise, in the more stringent fiscal constraints imposed by the deepening revenue as well as the fiscal deficit upon the different state governments in India. The reasons cited for this trend, in the literature, are many. The declining central transfers, inefficient own revenue mobilization, hike of revenue expenditure as a result of the fifth pay and pension commission revision, mounting interest payments etc. are important among them (George 1999, Kurien 1999, Rao 2002). Under these circumstances, the common sense view is that either a reduction in the revenue expenditure or an improvement in the utilization of existing resources may uplift the economy from the deepening crisis. However, the question of proliferation of expenditure may be difficult to solve because of the hike in the committed expenditure and the increasing need for the development expenditure[2]. This study, therefore, would like to concentrate on the revenue mobilization side, bearing in mind the expenditure side as given by the different exogenous factors beyond the control of the state governments. We are taking only Kerala for doing the analysis, albeit the results may be of relevance in respect of other major states in India.

2. The Indisposed Fiscal Health of Kerala: A Probe to the Reasons

Kerala, a state situating in the south-western part of India presumes significance in respect of several aspects. Her remarkable human development, huge amount of foreign remittances flowing to its economy, low credit deposit ratio, efficient implementation of land reforms and prevailing high rate of unemployment are some among them (George 1999, Kurien 1999, Kannan & Hari 2002). On the fiscal front, the State was functioning well up to the late eighties, having controllable revenue as well as fiscal deficits. However, this experienced a reverse trend during

the nineties. The different deficit indicators like the fiscal deficit, revenue deficit and the primary deficit are showing a declining trend in Kerala during the last one decade. The movements of different deficit indicators as a percent share of NSDP and MSI is given in tables 1 and 2. Due to the large foreign inflows, NSDP may not represent the true income of the economy. MSI by incorporating the foreign inflows may be a better indicator of state income. As a result, the deficit indicators as a percent share of MSI may convey a more realistic picture of the fiscal scenario of the state. We, therefore, take the ratio of deficit indicators to the MSI along with the NSDP.

Table 1. Different Deficit Indicators as Percentage of NSDP in Kerala

Year	FD/NSDP	RD/NSDP	PD/NSDP
1990-91	6.56	3.47	3.37
1992-93	4.26	1.96	1.10
1995-96	3.71	1.15	1.08
1997-98	5.04	2.34	2.35
2000-01	5.68	4.61	2.37

Note-   FD- Fiscal Deficit, RD- Revenue Deficit, PD- Primary Deficit.
          NSDP- Net State Domestic Product.
Source: Various Issues of RBI Bulletins, CSO, Estimates of SDP, Various
          issues

Table 2. Different Deficit Indicators as Percentage of MSI in Kerala

Year	FD/MSI	RD/MSI	PD/MSI
1990-91	6.08	3.22	3.12
1992-93	3.61	1.66	0.93
1995-96	3.06	0.95	0.89
1997-98	4.08	1.90	1.90
1999-00	5.91	4.72	3.37

Note-   FD- Fiscal Deficit, RD- Revenue Deficit, PD- Primary Deficit.
          MSI- Modified State Income.
Source: Various Issues of RBI Bulletins, Kannan and Hari (2002).

Figure 1 depicts the movement of fiscal deficit in Kerala during the last three decades.

Fig.1. Fiscal Deficit of Kerala
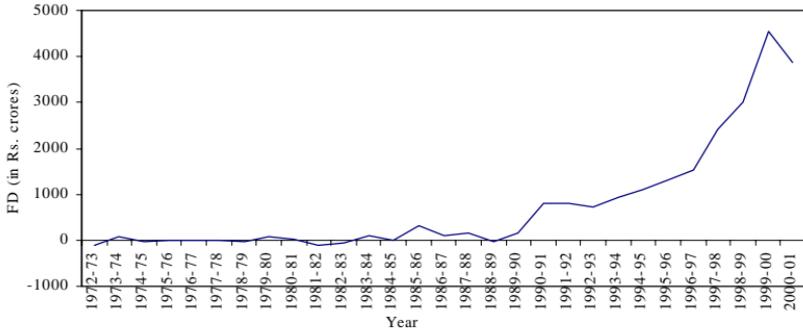
The fiscal deficit in Kerala is seen to decline from the year 1989-90.

2.1. Trends in the Expenditure Pattern

The story may begin in mid-eighties with the Fourth Pay Commission revision of pensions and salaries. This sudden change in the central policy may have imposed unexpected revenue expenditure burden upon the different state governments in India without an adequate increase in its revenue sources. In fact, this policy change may have increased the already existing vertical imbalance[3] in the Indian federation. Pension as a percent of NSDP in Kerala has almost doubled from 0.91 in 1980-81 to 1.85 in 1985-86 (Table 3). As a percentage of MSI, it doubled from 0.84 in 1980-81 to 1.69 in 1985-86 (Table 4). In 1997-98, the Fifth Pay Commission revision again increased the expenditure burden upon the state governments in India. In accordance, the pension to NSDP ratio has increased from 2.04 in 1995-96 to 2.83 in 2000-01 (Table 3). The respective ratios with MSI are 1.69 and 2.36 respectively (Table 4). Since the increase of salaries[4] and pensions are lump sum transfers to the individuals, with out the expectation of any

future income, it may worsen the situation than before. Since the states are obliged to obey the central policy, it may leave them in a helpless situation.

Table 3.   Major Expenditure Heads as Percent Share of NSDP in Kerala.

Year	IP/NSDP	PN/NSDP	CE/NSDP	DE/NSDP	EE/NSDP	SE/NSDP
1980-81	1.27	0.91	4.91	13.20	4.00	9.20
1985-86	1.96	1.85	8.05	16.03	4.10	11.94
1990-91	3.19	2.40	4.53	14.81	4.09	10.50
1995-96	2.63	2.04	3.12	9.72	3.14	6.59
2000-01	3.31	2.83	1.86	9.33	3.19	6.14

Note: IP- Interest Payments, PN-Pension, NSDP-Net State Domestic Product, CE-Capital Expenditure, DE-Development Expenditure, EE- Economic Expenditure, SE- Social Expenditure.

Source: Various Issues of RBI Bulletins. CSO, Estimates of SDP, Various Issues.

Table 4. Major Expenditure Heads as Percent Share of MSI in Kerala.

Year	IP/MSI	PN/MSI	CE/MSI	DE/MSI	EE/MSI	SE/MSI
1980-81	1.17	0.84	4.50	12.10	3.66	8.43
1985-86	1.80	1.69	7.39	14.72	3.76	10.96
1990-91	2.96	2.23	4.27	13.54	3.80	9.74
1995-96	2.17	1.69	2.58	8.02	2.59	5.43
1999-00	2.54	2.36	1.74	8.49	3.00	5.48

Note: CE-Capital Expenditure, DE-Development Expenditure, EE- Economic Expenditure, SE- Social Expenditure, MSI- Modified State Income, IP- Interest Payments, PN-Pension

Source: Various Issues of RBI Bulletins, Kannan & Hari (2002)

The bulged revenue expenditure may compel the state governments to soften their so-called hard budget constraint by resorting

to borrowings. As the central government itself is facing serious financial crunch, the scope for getting funds from the centre may be limited. This may be reflected in the changing composition of the total annual debt of the state governments in India. In Kerala, in 1990-91 loans and advances from the centre constitute the major part of total annual debt. It was 45.61 percent share of the total annual debt of Kerala (Table 5). However, the late nineties witnessed a clear change in the composition of the annual debt. In 2000-01, the percent share of loans and advances from the centre has declined to 13.32 and that of Provident Fund has increased to 45 (Table 5).

Table 5. Composition of Annual Debt of Kerala Government

Year	Internal debt as a percent of total debt	Loans and advances from centre as a percent of total debt	Provident fund as a percent of total debt
1990-91	21.62	45.61	32.77
1993-94	20.31	44.64	35.05
1997-98	39.75	33.43	26.82
1998-99	27.52	28.59	43.90
2000-01	41.12	13.32	45.56

Source: CMIE, Public Finance, Various Issues.

Thus, the composition of the total annual debt of the state government is changing in favour of the provident funds and the importance of the borrowings from the market is increasing on the other side. The revenue expenditure proliferation, owing to the increased interest payments, may be inherent in this changing composition of the total annual debt due to the expensiveness of the market borrowings and the provident funds. The interest payments as percent share of NSDP have increased from 1.27 in 1980-81 to 3.19 in 1990-91 and further to 3.31 in 2000-01 (Table 3). The respective ratios with MSI are 1.17, 2.96

and 2.54 respectively (Table 4). Thus, the situation may be dangerous, revenue expenditure hike leading to borrowings and in turn, borrowings leading to further revenue expenditure hike. The cyclical proliferation of revenue expenditure may, thus, be going on in the economy.

The worst outcome of these unhealthy trends may be the crowding out of capital expenditure in the economy. The capital expenditure as a percentage of the state domestic product is showing a continuous declining trend throughout the last one-decade. The capital expenditure as percent share of NSDP is declined from 4.53 in 1990-91 to 1.86 in 2000-01 (Table 3). Capital expenditure as a percent share of MSI registered a decline from 4.27 in 1990-91 to 1.74 in 1999-00 (Table 4). The increasing debt on the one hand and the decreasing capital expenditure on the other are pointing to the misuse of debt for meeting the revenue expenditure in the economy[5]. Further, in the revenue account the expenditure on development heads is also showing a declining trend throughout the decade. Development expenditure registered a decline from 14.81 in 1990-91 to 9.33 in 2000-01 as a percent share of NSDP (Table 3). As a percent share of MSI development expenditure exhibit a declining trend from 13.54 in 1990-91 to 8.49 in 1999-00 (Table 4). The decline in social expenditure, which declined from 10.50 in 1990-91 to 6.14 in 2000-01 as percent share of NSDP and 9.74 in 1990-91 to 5.48 in 1999-00 as percent share of MSI (Table 4), may cause serious adverse effects upon the well-being of the people especially upon the poorer sections of the population. The decline in economic expenditure, on the other hand, may cause serious adverse effects upon the development pace of the state's economy. The economic expenditure declined from 4.09 in 1990-91 to 3.19 in 2000-01 as percent share of NSDP (Table 3) and 3.80 in 1990-91 to 3.00 in 1999-00 as percent share of MSI (Table 4).

In retrospect, the expenditure side of the state governments seems to be inflexible. The hike in pension and salaries are due to the change in central policy, which may be an exogenous factor from the states' point of view. The acceleration of interest payments is a result of the change in the composition of debt, which may also be inevitable for dealing the situation of swelling revenue expenditure. The reduction of capital expenditure as well as the development component of the revenue expenditure may be against the development objective of the state governments in the end. The states, therefore, may not be able to reduce the revenue expenditure even if they wish to reduce it. We, therefore, argue that the state governments may have very little control over the revenue expenditure.

Having very little control over the revenue expenditure the states may have to solve the problems in revenue mobilization, if any, to escape from the deepening crisis. The next section of the paper is looking to the revenue mobilization side of Kerala.

2.2. Trends in Revenue Mobilization

Under any federal set up the sub national governments, have two important sources of revenue, own revenue and inter governmental transfers[6] . Compared to the own revenue the percentage of central transfers is very low at thirty percentages. Composition of the revenue receipts of the state government is given in Appendix 1. Further, the share of central transfers in the NSDP is showing a declining trend during the last decade. It declined from 7.01 in 1990-91 to 3.23 in 2000-01 (Table 8). As a percent share of MSI the central transfers declined from 6.51 in 1990-91 to 2.89 in 1999-00 (Table 7). As a result, the share of public expenditure financed by the central transfers is also showing a declining trend in Kerala. This ratio declined from 30.22 in 1990-91 to 18.53 in 2000-01 (Table 6). The sharp decline in the central transfers in

relation to economy's income may adversely affect the fiscal deficit of the state government. The reason given in the literature is the deteriorating financial position of the central government. Since the central government itself is facing serious financial crunch, the scope for increasing the fund for devolution among the different state governments is very limited in the future too (Kurien 1999, Rao 2002). Interestingly, this factor may also be an exogenous one from the states' point of view[7].

Table 6. Components of Revenue as Percent Share of Revenue Expenditure.

Year	TT/TRE	ONTR/TRE	OTR/TRE
1980-81	30.53	14.99	73.09
1985-86	34.52	9.81	50.54
1990-91	30.22	7.39	47.45
1995-96	25.84	9.19	58.06
2000-01	18.53	10.73	49.42

Note: TT- Total Transfers from the Centre, ONTR- Own Non-Tax Revenue, OTR- Own Tax Revenue, TRE- Total Revenue Expenditure.

Source: Various Issues of RBI Bulletins.

Table 7. Components of Revenue Receipts as Percent of MSI.

Year	TT/MSI	ONTR/MSI	OTR/MSI
1980-81	4.89	2.40	12
1985-86	7.04	2.00	10
1990-91	6.51	1.59	10
1995-96	3.54	1.26	8
1999-00	2.89	0.69	7

Note: MSI- Modified State Income, TT- Total Transfers from the Centre, ONTR- Own Non-Tax Revenue, OTR- Own Tax Revenue.

Source: Various Issues of RBI Bulletins, Kannan & Hari (2002).

Table 8. Components of Revenue Receipts as Percent of NSDP

Year	TT/NSDP	ONTR/NSDP	OTR/NSDP
1980-81	5.33	2.62	12.76
1985-86	7.67	2.18	11.23
1990-91	7.01	1.72	11.01
1995-96	4.29	1.53	9.64
2000-01	3.23	1.87	8.60

Note: NSDP- Net State Domestic Product, TT- Total Transfers from the Centre, ONTR- Own Non-Tax Revenue, OTR- Own Tax Revenue.

Source: Various Issues of RBI Bulletins, CSO, Estimates of SDP, Various Issues

The major financier of the public expenditure in the sub national levels is the own revenue of the state governments. Own revenue roughly constitutes seventy percentage of the total revenue of the state government and the percent share of revenue expenditure financed by the own revenue is also large at sixty to seventy percentages. Own tax revenue and own non-tax revenue are the two major components of own revenue. The contribution of own non-tax revenue to the total own revenue is very less at 10 to 15 percentages. The own non-tax revenue as a percentage of state domestic product is also showing a declining trend throughout the last two decades. This was 2.62 in 1980-81 and it declined to 1.87 in 2000-01 (Table 8). As a percentage of MSI own non-tax revenue declined from 1.59 in 1990-91 to 0.69 in 1999-00 (Table 7). This may point to the declining utilization of public services in Kerala. As a result, the amount of public expenditure financed by the non-tax revenue is declining in Kerala. The own non-tax revenue as a percent share of total revenue expenditure has declined from 14.99 in 1980-81 to 10.73 in 2000-01 (Table 6).

The own tax revenue is yet another revenue source exhibiting a desperate trend during the nineties. Own tax revenue constitutes sixty percentage of the total revenue of the state government in Kerala. It, on the other hand, is financing about 45 percent share of the revenue expenditure in the state. The decline of own tax revenue, as a percentage of the state domestic product is, therefore, a matter of serious concern in the context of the deepening fiscal crisis in the state. This ratio declined from 11.01 in 1990-91 to 8.60 in 2000-01 (Table 8).

Further, a more pathetic picture of own tax revenue mobilization may come to the forefront when we observe the ratio of own tax revenue to the Modified State Income[8]. The ratio of own tax revenue to the MSI declined from 10 in 1990-91 to 7 in 1999-00 (Table 7). These ratios may be more meaningful than the ratio of own tax revenue to the State Net Domestic Product. In fact, whatever may be the denominator, whether it be the State Net Domestic Product or it be the Modified State Income, the declining efficiency of own tax revenue mobilization is apparent. As a result, the own tax revenue as a percentage of revenue expenditure is also showing a declining trend from 73.09 in 1980-81 to 49.42 in 2000-01 (Table 6). Further, the growth rate of own tax revenue for the last two decades is 2.52, whereas the growth rate of NSDP and MSI for the same period are 4.8 and 5.5 respectively. Certainly, the growth rate of the own tax revenue is not going on in parallel line either with the State Net Domestic Product or with the Modified State Income[9]. The movements of the indexes of the own tax revenue, Modified State Income and the State Net Domestic Product are portrayed in figure 2.

Obviously, starting from the same point, the own tax revenue is lagging behind the State Net Domestic Product and the Modified State Income in the latter decades in Kerala. This trend of own tax revenue to lag behind the state net domestic product and its modified income is

starting in mid eighties. This may be an indication of tax leakage from the total revenue potential of the economy. In fact, this leakage from the revenue potential may be the one reason for the increasing financial deficiencies faced by the state. This argument stands only if the amount of leakage occurring from the revenue potential is large. It, therefore, becomes imperative to know the amount of leakage to assess the impact of this factor upon the fiscal health of the economy.

Fig 2. Movement of NSDP, MSI and OTR in Kerala
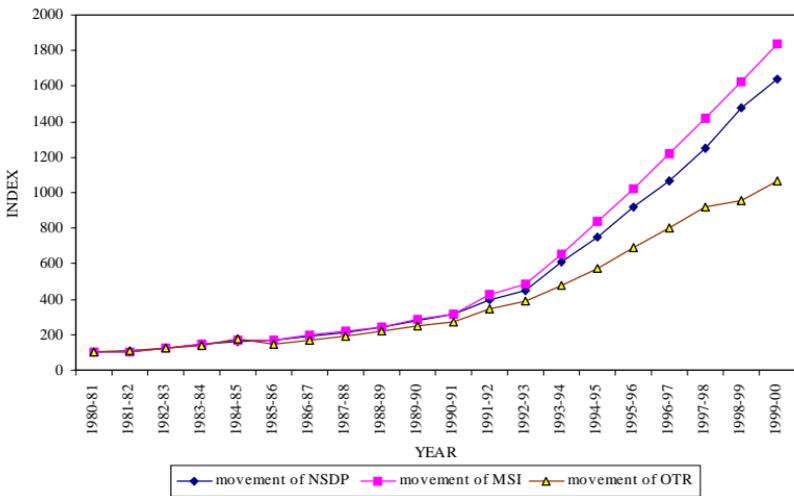
This revenue leakage, on the other hand, may be considered as the mirror image of the fiscal laxity of the state government. This fiscal laxity may be a factor upon which the state government may exert a control and it may be possible for the government to take measures to reduce the influence of this factor upon the fiscal crisis of the state government. Interestingly, this may be an endogenous factor from the state's point of view. Further, a precise measurement of the revenue gap may help expose the seriousness of the problem in its entirety. In consonance, the state government may modify its revenue collecting mechanisms. The revenue leakage may, therefore, become germane in

the context of the resource crunch faced by the state government during the nineties.

Unfortunately, very few attempts have taken place previously in this direction[10]. This study is going to be different in this respect by attempting a time series macro estimate of tax potential in the economy. Such an estimate may be useful in analyzing the impact of tax leakage upon the revenue deficit over a decade. We take only the sales tax since it is the most important contributor of revenue to the state government. Sales tax constitutes nearly 45 percent share of the total revenue of the state government and it finances nearly one third of the revenue expenditure in the economy.

3. Analytical Framework

The analysis present in the earlier sections suggests that tax leakage may seriously affect the fiscal health of the economy. Unlike the other probable reasons of fiscal crisis, this is a factor upon which the state government has a control. Thus, a detailed analysis of tax leakage may be helpful in understanding the probable solutions of fiscal crisis from the state's point of view. In this background, the main purpose of this section is to set up a clear-cut relationship between the tax leakage and the fiscal health of the state's economy.

Fiscal health of any economy depends on the sustainability of its financial matters. If an economy is fiscally sustainable, it may successfully survive in the end. In fact, such sustainability may be vital in ensuring inter temporal freedom for designing the pattern of public expenditure. In fact, fiscal sustainability may be considered as a dynamic stage of development, in which the economy is growing with sizable public investment in its economy, the financing mode of that public expenditure may constitute both revenue receipts and debt receipts, and at the same

time the proportion of economy's income needed for repaying the debt burden is on a decelerating track.

In fact,

$$FD = PD + I$$

Where PD is primary deficit, FD is fiscal deficit and I is interest payments

If the primary deficit is zero, fiscal deficit may equal interest payments.

$$FD = I$$

This interest payments payable in period t may equal

$$I_t = D_{t-1} * i$$

Where i is the interest rate and D_{t-1} is the stock of debt in the previous period

This interest payments in relation to economy's income may be written as

$$B_t = D_{t-1} * i / NSDP_t$$

Where B_t is the burden of debt in period t.

That is

$$B_t = D_{t-1} * i / NSDP_{t-1} (1 + r)$$

Where, r is the rate of growth of the economy.

$$B_t = [D_{t-1} / NSDP_{t-1}] * [i / (1 + r)]$$

$$B_t = DR_{t-1} * [i / (1 + r)]$$

Where, DR_{t-1} is the debt ratio in the previous period, which may be set in the current period. The burden of debt in the current period, therefore, may depend on the ratio $[i / (1 + r)]$. Clearly, when interest rate is less than the rate of growth of the economy, the debt burden may decline in the economy and the system may move towards sustainability. Thus, keeping the primary account surplus or keeping the primary deficit equal to zero may be a necessary condition for attaining fiscal sustainability. The second condition being the rate of interest below the rate of growth of the economy.

Tax leakage may cause a drain from the revenue receipts of the economy. The corresponding reduction in the revenue receipts may disturb the primary account position. Since primary account balance is a crucial condition for achieving fiscal sustainability, tax leakage might have been influencing the fiscal sustainability in an indirect way. An analysis in this line is carried out in the later part of this study. Thus, given the relationship between the tax leakage and fiscal sustainability, the next section is a unique attempt to estimate the tax leakage in Kerala.

4. The Missing Revenue: The Case of General Sales Tax in Kerala

Tax leakage, as defined in this study, is a sum of tax evasion and tax avoidance. It is the difference between the tax potential and the tax collection. For a detailed analysis, we are taking only the state sales tax, which is contributing almost ninety percentage of the total sales tax in Kerala. (The concepts and definitions used in this section and the particulars about the data and methodology are explained in the Technical Appendix). In the literature, several attempts have made by scholars to measure the absolute as well as the relative tax efforts of the different states in India (Bahl 1971, Rao & Nambiar 1972, Reddy 1975, Thimmaiah 1979, Chellaiah & Sinha 1982, Oommen 1987, Sen 1997).

However, the methodologies used by them, like representative tax system approach, aggregate regression method, incremental tax ratio method and the tax SDP method are not free from limitations. These methodologies seemed useful in measuring the relative tax efforts of different states, but may be of less use from the point of view of the absolute tax effort.

The studies, which attempted to measure the absolute tax potential of an economy are the Report on Commodity Taxation (1976), Chellaiah and Purohith (1985) and Report of Resource Commission (1993). These studies measured the change of tax leakage over and above the base year, which may not be the absolute amount of tax leakage in its strict sense. Albeit, the assumption of minimum tax leakage year seems realistic, more serious unrealistic assumptions may be implicit in these methodologies. To illustrate, these studies consider the economy as a static entity in that they assume the base structure and the rate structure of commodities may not undergo changes from the minimum tax leakage year in the economy. In fact, as we all know, the economy is dynamic, in which the tax structure, price level and volume of trade, every thing may undergo changes. On the contrary, the production method, used by Sebastian, is useful in capturing this dynamism, but needs time series data on a number of variables for a relatively longer period. Since the reliable data on the needed variables are not available for a number of years in Kerala, this methodology may be of less use in estimating the potential on a time series basis.

4.1.   The Partial Adjustment Model: An Attempt to Estimate the Unrealized Gap

This is a well-accepted model for calculating the objective maximum of any variable in the economy. This model is given by Marc Nerlove in 1957. The key idea of the model is as follows. Logically, tax

potential in each year may be a function of the tax base. The amount of sales tax potential in each year, therefore, may be a function of consumer expenditure of the corresponding years, given the rate structure and base structure of the commodities. This linear relationship can be written as

$$Y_t^* = \alpha + \beta X_t + u_t$$

Y_t^* = tax potential or the maximum collectable tax, given the rate structure and the base structure of the economy.

X_t = consumer expenditure

u_t = error term

However, this maximum level tax or the tax potential is not directly observable in the economy. Hence Nerlove postulates the following hypothesis, known as the partial adjustment hypothesis:

$$Y_t - Y_{t-1} = \delta (Y_t^* - Y_{t-1})$$

Where

δ, Such that $0 \leq \delta \leq 1$, is known as the coefficient of adjustment and where

$Y_t - Y_{t-1}$ = actual change and $Y_t^* - Y_{t-1}$ = desired change.

The whole idea is that the actual change in sales tax in any given time period t is some fraction δ of the desired change for that period. Once we get the value of δ we can calculate the values of α and β respectively, by dividing the intercept term and the coefficient of consumption expenditure by δ. Now substituting the values of α and β in the equation

$$Y_t^* = \alpha + \beta X_t$$

We can arrive at Y_t^*.

For estimating δ, consider the hypothesis

$$Y_t - Y_{t-1} = \delta (Y_t^* - Y_{t-1})$$

$$Y_t - Y_{t-1} = \delta Y_t^* - \delta Y_{t-1}$$

$$Y_t = \delta Y_t^* - \delta Y_{t-1} + Y_{t-1}$$

$$Y_t = \delta Y_t^* + (1-\delta) Y_{t-1}$$

Now substituting the function for Y_t^* in the above equation, we get

$$Y_t = \delta (\alpha + \beta X_t + u_t) + (1-\delta) Y_{t-1}$$

$$Y_t = \delta\alpha + \delta \beta X_t + (1-\delta) Y_{t-1} + \delta u_t$$

Now we can estimate the above equation and obtain the estimate of the adjustment coefficient, δ from the coefficient of Y_{t-1}. In this model, the coefficient δ captures the technical or institutional rigidities, inertia etc. in the economy.

4.2. The Estimation Procedure: Points to Note

The most important characteristic of the PAM may be its dynamic nature. Given the growth in consumer expenditure, rate structure and base structure of general sales tax in Kerala, there may be an objective maximum collectable tax in every year. However, due to the institutional rigidities as well as the inherent inertia in the economy, this maximum collectable tax or the tax potential may not realize in practice. The PAM presumes an adjustment mechanism between the tax potential and the

tax collection, which may be taking place in each period. The parameter δ is the adjustment coefficient, which may represent the rate at which the tax collection is adjusting to its potential in each period. In fact, the tax collection in the economy may be determined by two factors: the growth of the tax base and the efficiency of the collecting mechanism. We may assume a positive linear relationship between the consumer expenditure, the tax base and the sales tax potential. The efficiency of tax collection may also have a positive relationship with the tax collection. The model considers these two factors while estimating the value of δ. Consumer expenditure is directly figuring in the estimating equation. The second explanatory variable, Y_{t-1} may capture the institutional rigidities inherent in the economy. Thus, this model may be useful in measuring the absolute tax potential of sales tax on a time series basis by considering the dynamism of the economy. For analysis, we have taken the period from 1972-73 to 1999-2000. We have taken the consumer expenditure data from the NSSO quinquennial rounds. Since the NSSO 55th round have some dissimilarities with the other rounds of NSSO, we made some adjustments in the NSSO 55th round in order to make it comparable with the other rounds.
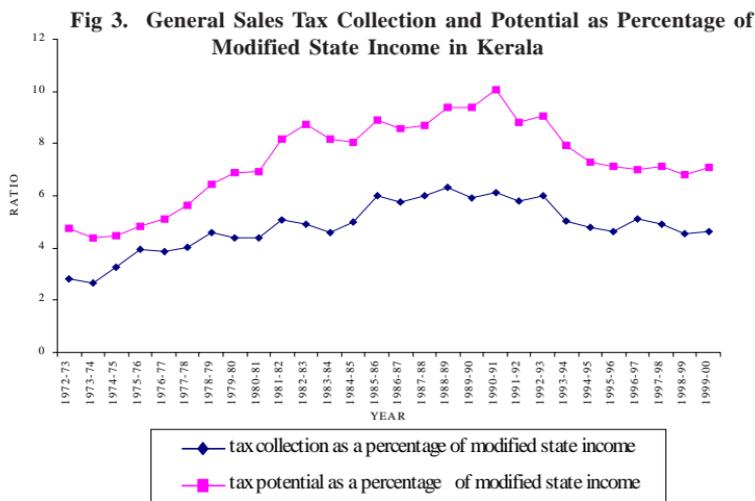
4.3. Results

The value of δ is found to be 0.2969. The value of the intercept is found to be –6.498 and that of the coefficient of consumer expenditure is found to be 1.322. We estimated the equation in the double log form. The intercept may, therefore, become a very small positive value near to zero when we take the anti log of it. Clearly, when the consumer expenditure is zero, the collection of sales tax is also zero. The regression results are given in Table 9 and the result of the residual analysis is given in Table 10. The detailed co integration results are given in the Appendix 2.

Table 9. Regression Results.

Variables	Coeffi-cients	Standard Error	t Value	p Value	R^2	DW	F
Intercept	-1.92927	1.112986	-1.73342	0.097017	.9974	1.83	4293.94 (3.03E-29)
lnCE	0.392473	0.198755	1.97465	0.06099			
ln Y_{t-1}	0.703109	0.146505	4.79920	8.58E-05			

Table 10. Results of the Residual Analysis.

DF- Test	*ADF-Test*
With constant and trend: -4.3257*	Without constant and
With constant: -4.4333**	trend, two lags:-2.9795**
Without constant and trend: -4.5290**	

Fig 3. General Sales Tax Collection and Potential as Percentage of Modified State Income in Kerala

The movement of the tax potential, thus, derived from the model is portrayed in figure 3. The tax collection is deviating from the potential collection possibility curve of general sales tax in Kerala. More importantly, the gap between the tax potential and the tax collection is increasing in the latter decades. Tax collection, potential, leakage and leakage as a percent of potential are given in table 11.

Table 11. General Sales Tax Collection, Consumption Expenditure, General Sales Tax Potential, General Sales Tax Leakage and the Ratio of Leakage to Potential in Kerala (in Rs. crores).

Year	General Sales Tax	Consumption Expenditure	General Sales Tax Potential	General Sales Tax Leakage	Leakage as a % of Potential
1972-73	41.49	1150.57	69.82	28.33	40.58
1973-74	48.79	1280.67	80.81	32.02	39.62
1974-75	69.00	1429.69	93.89	24.89	26.51
1975-76	89.74	1600.68	109.53	19.79	18.07
1976-77	97.18	1797.28	128.27	31.09	24.24
1977-78	107.69	2023.77	150.80	43.11	28.59
1978-79	132.85	2369.49	186.98	54.13	28.95
1979-80	147.62	2779.11	232.39	84.77	36.48
1980-81	182.51	3266.54	289.68	107.17	36.99
1981-82	224.14	3850.28	362.47	138.33	38.16
1982-83	256.09	4536.97	453.37	197.28	43.51
1983-84	283.27	4895.28	502.88	219.61	43.67
1984-85	348.88	5308.21	561.59	212.71	37.88
1985-86	425.52	5776.73	630.24	204.72	32.48
1986-87	477.80	6303.99	709.95	232.15	32.70
1987-88	553.52	6894.88	802.20	248.68	31.00
1988-89	638.16	7783.82	946.44	308.28	32.57
1989-90	702.58	8789.95	1117.06	414.48	37.10
1990-91	800.68	9929.00	1318.96	518.28	39.29
1991-92	1023.50	11218.91	1557.97	534.47	34.31
1992-93	1213.98	12680.03	1841.01	627.03	34.06
1993-94	1375.51	14335.56	2176.32	800.81	36.80
1994-95	1688.58	16170.96	2564.86	876.28	34.16
1995-96	1976.63	18248.73	3024.42	1047.79	34.64
1996-97	2600.14	20601.48	3568.22	968.08	27.13
1997-98	2911.64	23266.26	4211.95	1300.31	30.87
1998-99	3091.80	26285.22	4616.62	1524.82	33.03
1999-00	3554.50	29706.23	5427.08	1872.58	34.50
2000-01	3971.43	26535.54	6161.66	2190.23	35.55

Source: Various Issues of RBI Bulletins, NSSO Data on Consumption Expenditure.

5.   Tax Leakage and Fiscal Crisis: The Invisible Links

        The tax leakage and the fiscal crisis of the state may be related through the revenue deficit of the state. In fact, almost 80% of the fiscal deficit is constituted by the revenue deficit and this contribution of revenue deficit is increasing throughout the decade. This is given in table 12.

Table 12. Composition of Fiscal Deficit during the Last Decade in Kerala.

Year	RD/FD	NL/FD	CO/FD
1991-92	52.8	15.1	32.1
1992-93	45.3	19.0	35.6
1993-94	46.1	15.9	38.0
1994-95	39.7	21.4	38.9
1995-96	36.1	23.7	40.2
1996-97	30.9	25.8	43.3
1997-98	41.7	18.0	40.4
1998-99	46.5	22.9	30.6
1999-00	67.4	10.7	27.8
2000-01	81.2	4.0	14.9

Note: RD- Revenue Deficit, FD- Fiscal Deficit, NL- Net Lending, CO-
        Capital Outlay

Source: Various Issues of RBI Bulletins

        The arresting of the problem of fiscal deficit may, therefore, mean arresting the revenue deficit. The tax leakage may create problems in the revenue mobilization side of the state's economy and thus may intensify the financial crunch faced by the state. A scrutiny into the movements of different deficit indicators with and with out tax leakage may fortify this argument. Table 13 shows this relationship.

Table 13. Different Deficit Indicators with and without Tax Leakage in Kerala (in Rs crores).

Year	Revenue deficit with tax leakage	Revenue deficit without tax leakage	Fiscal deficit with tax leakage	Fiscal deficit without tax leakage	Primary deficit with tax leakage	Primary deficit without tax leakage
1990-91	-422.02	96.26	-798.54	-280.26	-410.33	107.95
1992-93	-337.41	289.62	-731.99	-104.96	-189.48	437.55
1994-95	-399.88	476.40	-1108.65	-232.37	-288.98	587.30
1996-97	-643.03	325.05	-1542.47	-574.39	-439.06	529.02
1999-00	-3624.2	-1751.62	-4536.60	-2664.02	-2584.30	-711.72
2000-01	-3147.1	-956.87	-3877.88	-1687.65	-1620.21	570.02

Note: deficits calculated as the difference between the receipts and the expenditure. The negative values, therefore, indicate deficit and the positive values indicate surplus.

Source: Various Issues of RBI Bulletins.

It is palpable, from table 13 that the revenue account would transform to lower deficits if there were lesser tax leakage in the economy. In accordance, the fiscal deficit is also exhibiting a similar trend. A yet another fact coming out of table 13 is the elimination of primary surplus by tax leakage. Elimination of primary surplus may endanger the fiscal sustainability of the state. Given conditions for fiscal sustainability, it is clear from table 13 that the single factor tax leakage is itself strong in jeopardizing the fiscal sustainability of the state. In Kerala, it is found that almost 35% of the tax potential is not tapped in practice. These points are leading to the importance of curbing tax leakage in the economy. Furthermore, amount of revenue expenditure that might be financed through the tax leakage is higher than that of the excess revenue expenditure over and above the revenue receipts. This fact is reversing

only in the last two years 1999-2000 and 2000-01. This is shown in figure 4.

These points are leading to the fact that there may be under utilization of tax potential in the economy. This confirms the argument that tax leakage may be one of the important reasons for the deepening revenue as well as the fiscal deficit of the state. Further, the most noteworthy feature of this tax leakage may be its capability to endanger the fiscal sustainability of the state. Thus, we may argue that the present resource crunch faced by the state government may be the result of the poor fiscal management. Furtherance in the efficiency of tax collecting mechanisms may be useful in lifting the economy from the crisis by restoring the fiscal sustainability of the state government.

Fig 4. Tax Leakage and Excess Expenditure as a percent of Total Revenue Expenditure in Kerala
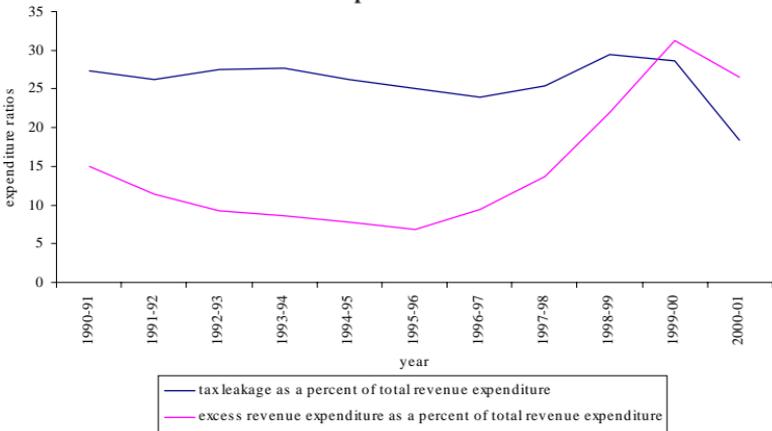
Summing-up

In retrospect, the entire analyses have shown that the financial problems faced by the state are an after effect of the poor fiscal management of the state. The expenditure proliferation, which is faced by almost all the states in India, is largely determined by the exogenous

factors. The controlling power of the state over such factors is rather limited. However, in the revenue mobilization side, except in the case of central transfers, the rest are under the control of the state government. A better cognizance of such endogenous factors may be helpful in correcting the fiscal imbalance of the state. This study is a step in this direction. Our major finding of 35% leakage from the state sales tax potential may be a clear indication of the under utilization of the revenue resources of the state. Analyses show that the advancement in the revenue collecting mechanisms may be effective in uplifting the economy from the deepening fiscal crisis by reinstating the fiscal sustainability of the state government. Thus, if the government gives little attention to this revenue leakage, it may be able to preclude the transformation of fiscal crisis into a larger development crisis of the economy.

Technical Appendix

1)   *Tax Evasion and Tax Avoidance*: Tax evasion is an illegal activity. In this case the taxpayer is not paying taxes to the government by simply violating the tax laws. Tax avoidance, on the other hand, is a legal activity. In tax avoidance, the taxpayer is standing under the purview of the tax laws, but he is also not giving taxes to the government by wrongly interpreting the tax laws.

2)   *Tax Potential*: In the literature, the tax potential is defined as the maximum sacrifice that an economy can suffer without adversely affecting its productive activity. This definition of tax potential is important for determining the tax rates and the respective tax bases for each tax in the economy. Nonetheless, tax potential, as defined in this study, is little different. In fact, we are concerned with a second-degree question. Given the tax rates and the growth and structure of the tax base, there will be a maximum collectable tax in any economy. It is to this objective maximum of collectable tax that this study is concerned with.

3) *General Sales Tax or State Sales Tax*: Total sales tax includes central sales tax, sales tax on motor spirit, purchase tax on sugar cane and the state sales taxes. A state sales tax is otherwise known as the general sales tax. General sales tax is imposed on intrastate trade and hence, the consumption expenditure of the state forms the tax base of it. Central sales tax is imposed on the interstate trade of commodities. The collecting power of the tax is given to that state from whose state the commodity is going to another state and hence, in this case, the consumption expenditure of the trade destination state forms the tax base.

4) *Representative Tax System Approach*: Under representative tax system approach, first an appropriate tax base for each tax has to be identified. A set of representative tax rates, namely effective rates, has to be generated for each tax across different states. The product of average of these effective rates and the potential base of tax in each jurisdiction may represent the tax potential if that particular jurisdiction is utilizing its tax base to an average extent.

5) *Aggregate Regression Method*: Aggregate regression method presumes that the actual tax ratio, the ratio of tax collection to the tax base, depends on both the tax capacities as well as on the tax effort factors. If we, therefore, regress the actual tax ratio on the tax capacity factors alone the residual of the regression can be attributed to the tax effort. A ratio of actual tax ratio to the estimated one may reflect an index of tax effort and can be use for comparing the tax efforts of different states.

6) *Incremental Tax Ratio*: Incremental tax ratio is a simple ratio between the changes in tax revenue to the changes in income. We can compute this ratio for a number of years and see the maximum value of it. The measurement of the tax potential if the economy is maintaining the maximum ratio is helpful in measuring the tax potential in its relative sense. In a similar way the tax SDP ratio,

the elasticity coefficient and the buoyancy coefficient are also useful.

7)   *Production Method*: Jose Sebastian uses production method for arriving at the sales tax potential of Kerala economy. In this method, the total turn over of the commodity is considered as the local production *plus* imports minus exports. The applications of the tax rates upon the value of total turn over of the commodities give the total sales tax potential of the economy. This method needs desegregate data on exports, imports and the local production of a number of commodities for a relatively longer period.

8)   *Partial Adjustment Model*: Marc Nerlove is an eminent agricultural economist who developed the partial adjustment model for studying the supply response in agriculture. Now this model is frequently used in several areas of economics like banking, gender, agriculture etc. For example, see Kao and Lee (1992), Iwarere (1994) and Cason and Friedman (1999).

9)   *The Parameter* δ: In the partial adjustment model, if $\delta = 1$, it means that the additional actual collection in the year t is equal to the additional tax potential and hence no additional tax leakage. If $\delta = 0$, on the other hand, means no additional tax collected in the time period t, and hence the existence of complete marginal tax leakage. Typically, the value of δ, therefore, is expected to lie between these two extremes.

10) *Selection of Tax Base*: Since consumption expenditure is the tax base for the sales tax, we assume a positive relationship between the two. Several studies pointed out that the inputs consumed in the economy might form the tax base of sales tax in the economy. However, according to the tax incidence theory, the tax burden upon the raw materials may be shifted to the finished products.

These finished products are figuring in the consumer expenditure of the state and hence the inclusion of inputs directly into the equation may result in double counting. Some studies put forward the idea that the degree of urbanization, monetization, length of roads etc, is important in determining the sales tax potential. Nonetheless, this study feels that these factors are influencing the sales tax potential through the consumption expenditure. It, therefore, may result in high multicollinearity problems if we include these factors into the equation.

11) *Meaning of the Model*: Y_{t-1} itself is a function of tax evasion prevailing in the economy because the value of it is determined by the consumption expenditure and tax leakage prevailing in the last year. It may, therefore, be used as a proxy for the institutional rigidities present in the economy. In fact, the inverse of institutional rigidities represents the efficiency of tax collecting mechanisms. Thus, while the coefficient of consumer expenditure shows the responsiveness of tax collection to the growth of tax base, the coefficient of last year collection of sales tax shows the responsiveness of the sales tax collection to the efficiency of tax collection in the economy. We, therefore, expect positive relationships between the explanatory variables and the dependant variable.

12) *Period of Study*: Kerala experienced a sudden break through in foreign remittances during the early seventies, due to the gulf boom. The oil price hike in October 1973 marked a major watershed in the migration process. The Gulf countries became wealthy overnight and for the additional labour they turned to non-Arab countries such as Pakistan and India (Zachariah, Mathew and Rajan, 2000). Many of the keralites migrated to the gulf countries and started to work there. Their remittances into the state increased the volume of money flow into the state. As a result, the construction and the tertiary sectors experienced a boom

in the state. All of these developments had their own impact upon the consumer expenditure of the state. This is the reason for selecting the particular period for doing the analysis.

13) *Data on Consumption Expenditure*: NSSO quinquennial rounds data are available for the years 1972-73, 1977-78, 1983, 1987-88, 1993-94 and 1999-00. We interpolated the data based on growth rates for the other years. Per capita monthly consumer expenditure data, separately for rural and urban, is available in NSSO. We have taken the weighted average of the rural and urban consumer expenditure and multiplied it by twelve and the total population of the state. This data source includes both the taxable and the non-taxable commodities and expenditure on different consumer services. We, therefore, deducted the expenditure on non-taxable goods as well as the expenditure on consumer services from the total consumer expenditure of the state.

14) *Note on NSSO Data*: In the first five quinquennial surveys, NSSO used almost similar reference periods, definitions and classifications, though the sample size is increasing in all the quinquennial surveys. In the sixth quinquennial survey NSSO have changed the practice a little. In the fifty-fifth round (sixth quinquennial survey), NSSO divided the whole sample into two schedules. In the first schedule, they used a uniform reference period of thirty days just before the date of survey. In the second schedule, NSSO used a reference period of seven days for pan, tobacco and intoxicants, 365 days for clothing and footwear and thirty days for the rest of the items. In order to maintain the comparability between the different quinquennial surveys, this study used the schedule I data from the sixth quinquennial survey. The first five quinquennial surveys are similar in their classification of consumer expenditure too. However, the sixth quinquennial survey is different in this respect also. In the sixth

quinquennial survey, the first entry is given as rice and rice products, wheat and wheat products and cereals. The expenditure on these items is given separately in all the other surveys. This study, therefore, for maintaining the comparability, just added the three figures available in respect of these three items in all the other quinquennial surveys. Further, expenditure on dry fruits is given separately in the fifty-fifth round. The expenditure on fresh fruits and dry fruits are given together in all the other surveys. This study, therefore, just added the separate figures given in the fifty-fifth round for maintaining the comparability. Similarly, in the case of pan, tobacco and intoxicants too, adding the appropriate figures solved the problem. In the first five quinquennial surveys, the rest of the goods are classified as miscellaneous consumption goods. However, a detailed classification is available in the fifty-fifth round of NSSO. In the fifty-fifth round the classification is given as miscellaneous consumption goods, miscellaneous consumption services, rents, taxes and cesses, education, medical (I), medical (N) and durable goods. In this case, for maintaining the minimum comparability, this study first added the above-mentioned entries in the NSSO fifty-fifth round. After adding, we calculated the percentage of each item in the total sum. We have used these percentages, derived from the NSSO fifty-fifth round, to desegregate the data available in the other quinquennial surveys. After desegregating the data available in the first five quinquennial surveys, this study deducted the items like services, rent, and taxes from the total consumer expenditure. The reason is these items are not forming the tax base of sales tax in Kerala.

Appendix 1

Composition of Total Revenue in Kerala.

YEAR	TT/TR	OR/TR	OTR/OR	ONTR/ OR	O. taxes/ OTR	ST/ OTR
1980-81	25.74	74.26	82.98	17.02	58.20	41.80
1981-82	23.89	76.11	70.11	29.89	54.96	45.04
1982-83	25.64	74.36	84.29	15.71	55.92	44.08
1983-84	28.78	71.22	85.48	14.52	55.96	44.04
1984-85	27.23	72.77	86.50	13.50	56.11	43.89
1985-86	36.39	63.61	83.75	16.25	37.25	62.75
1986-87	46.91	53.09	83.24	16.76	36.51	63.49
1987-88	40.61	59.39	83.07	16.93	35.19	64.81
1988-89	46.58	53.42	85.45	14.55	35.20	64.80
1989-90	43.80	56.20	87.60	12.40	37.63	62.37
1990-91	35.53	64.47	86.52	13.48	33.04	66.96
1991-92	33.08	66.92	87.70	12.30	32.97	67.03
1992-93	34.72	65.28	87.10	12.90	30.81	69.19
1993-94	31.97	68.03	87.89	12.11	34.61	65.39
1994-95	31.52	68.48	87.60	12.40	33.37	66.63
1995-96	27.76	72.24	86.33	13.67	32.42	67.58
1996-97	28.20	71.80	88.36	11.64	28.89	71.11
1997-98	29.01	70.99	89.07	10.93	31.48	68.52
1998-99	27.66	72.34	89.29	10.71	27.59	72.41
1999-00	27.92	72.08	90.73	9.27	25.80	74.20
2000-01	25.22	74.78	82.16	17.84	25.99	74.01

Note: TT= Total Transfers from the Centre, TR= Total Revenue, OR= Own Revenue, OTR= Own Tax Revenue, ONTR= Own Non Tax Revenue, O. Taxes= Other Taxes, ST= Sales Tax.

Source: Various Issues of RBI Bulletins

Appendix 2

Co Integration Results

The variables state sales tax and the consumption expenditure are found to be integrated of order one. The results are given in the following table.

Co Integration Results

Variable	Lag	Value
Δ SST	LAG 4	-3.3505*
Δ CE	LAG 4	-3.3760*
Residual	LAG 2	-3.2934*

The linear combination of these two variables, state sales tax and the consumption expenditure, is found to be stationary at the level.

Model Adequacy Tests

AR 1- 2 F (2, 21)   =   2.3588 [0.1191]
ARCH 1 F (1, 21)   =   0.8542 [0.3659]
Normality Chi^2(2) =   4.6787 [0.0964]
Xi^2   F (6, 16)   =   0.72069 [0.6390]
Xi*Xj F (9, 13)   =   0.42083 [0.9013]
RESET F (1, 22)   =   0.48583 [0.4931]

None of the model adequacy tests are found to be significant. Thus, we can infer that the fitted model is good.

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Notes

1   Musgrave confined the role of the state in three important functions: allocation of resources, stabilization of the economy, and the redistribution of income and wealth in the economy. However, in the writings of Stiglitz, the role of the state is welcomed in three important situations, that is, market failure, externalities, and the provision of public goods. Even though, theoretically modern public economics is welcoming a minimum role for the state, in India from the Nehruvian era it followed central level planning. The Indian ideology of mixed economy gives more importance to the centralization and the control by the state. Only after 1991, the approach has changed and now India is going towards more openness and following market friendly approaches. We, therefore, may argue that the role of the state has undergone a change in India.

2   The question of proliferation of expenditure in the Kerala context is well explained in the coming section. It is from that analysis we arrived at the conclusion that the hike of committed expenditure and increasing need for the development expenditure are the main reason for the expenditure spurt in Kerala. The arguments seem valid in the context of other major states too.

3   Under any federal set up, efficient expenditure and tax policy needs the allocation of revenue raising powers and the expenditure obligations across the different levels of government. This allocation is usually made based on cost minimization and the efficient implementation criterions. Vertical imbalance is, therefore, inevitable in any federal set up, since the central government enjoys advantages in the case of revenue rising and the state or the regional governments enjoy advantages in

providing public services. Inter governmental transfers are the means to avoid this problem of vertical imbalance under the federal set up. The fifth pay commission revision increases the expenditure burden upon the different state governments in India. However, this increase in the expenditure burden was not followed by an additional enhancement in the central transfers. In fact, the amount of central transfers has shown a declining trend to the different state governments in India. We, thus, may argue that the change in the expenditure policy of the central government increased the already existing vertical imbalance in India.

4   Fourth pay commission revision affected both the pensions and the salaries. However, in the RBI state finances, data on salaries are scattered on a number of items, such as administrative expenditure, social expenditure, economic expenditure, etc. It, therefore, is very difficult to see the changes in the movements of salaries alone as a percent share of NSDP from the RBI data.

5   Financing of revenue expenditure using the debt instruments are termed as a misuse because usually the debt are used to finance the capital expenditure, since it is considered to be economically productive. The income generated from the capital investment can be used to repay the amount of debt and its interest payments. This logic of repayment does not hold in the case of revenue expenditure. The financing of revenue expenditure using the debt instruments, therefore, is an unhealthy practice since unproductive debt may indispose the fiscal health of the economy.

6   Intergovernmental transfers have a number of roles to play in a federation like India. Compensating for the inter jurisdictional

spillovers, fiscal equalization in terms of the elimination of vertical as well as the horizontal imbalances and facilitating the working of efficient tax as well as the expenditure systems are the important roles of it in a federation (Oates 1999). However, several studies (Rajaraman and Vashishtha 2000) have already proved that the intergovernmental transfers have a negative impact on the tax effort of the sub national governments in a federation. In India, the states are getting transfers through three different channels such as planning commission, finance commission and through the different central ministries. The designing of inter governmental transfers; in the most appropriate form is an unresolved issue in federal finance.

7   The trend in fiscal transfers is considered exogenous to the state government because the absolute amount of transfers received by a state government is determined by the criteria of Finance and the Planning Commissions. An individual state may, therefore, receive an amount corresponding to its relative position among all the other states in the Indian federation. In fact, the influential power of any single state upon the central transfers is very limited.

8   Large foreign remittances are a peculiar feature of Kerala economy, which in fact may have the power to expand the tax base of the economy. Modified State Income constitutes both Net State Domestic Product and the foreign remittances and hence considered to be a more appropriate tax base for the own tax revenue than the State Net Domestic Product. We have taken the figures of MSI from a recent study by Kannan and Hari (2002).

9   Roughly, the State Domestic Product forms the tax base for the own tax revenue of the state governments. Nevertheless, in the

Kerala context, due to the large inflow of foreign remittances this may not be true. The Modified State Income may be a better proxy than the State Net Domestic Product. The growth rate of the own tax revenue may have to be responsive to the growth rate of the tax base, namely, Modified State Income. At least the growth rates may have to be equal, albeit the favorable condition being growth rate of the tax collection greater than the growth rate of the tax base. In fact, decline in the ratio of own tax to MSI may be an indication of tax leakage because the tax rates and the coverage of commodities under the tax net are on continuous increase along with the growth in the tax base. Naturally, the maximum collectable tax is increasing in the economy and hence the tax MSI ratio may, at least, be a constant over time if the tax leakage occurring from the potential is not increasing in the economy.

10. One such attempt is made by Jose Sebastian (1994). He carried out a cross sectional study of sales tax in Kerala. He took two periods and looked at the leakage from the sales tax revenue.

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