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# Fiscal Sustainability Analysis of Tamil Nadu

SWATI RAJU

Fiscal sustainability is associated with the idea that governments can continue with the existing fiscal policies indefinitely and remain solvent. This article examines the fiscal sustainability of Tamil Nadu by looking at four major deficit indicators, viz, the revenue deficit, the primary revenue balance, the primary deficit and the gross fiscal gap using the Gregory-Hansen Cointegration test. It contends that if revenues and expenditures are both difference stationary and cointegrated, the fiscal stance is sustainable. Alternatively, if revenues and expenditures are difference stationary but not cointegrated, then the fiscal position is deemed to be unsustainable. Evidence for Tamil Nadu using annual data for 1971-2006 finds that when considered in real terms with the exception of the gross fiscal gap, the other three deficit indicators – the revenue deficit, the primary deficit and the primary revenue balance – are not sustainable.

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Sustainability of government finances is conceptually associated with the concept of solvency, that is, it refers to the ability of a government to service its debt without explicitly defaulting on them. In other words, fiscal sustainability analysis “relates to a government’s ability to indefinitely maintain the same set of policies while remaining solvent” [Burnside 2005]. Fiscal sustainability of state (subnational) governments is different from that of national government as subnational governments face a hard budget constraint since they cannot resort to deficit financing and their access to borrowing is regulated. Further, as per the recommendations of the Twelfth Finance Commission, state governments would henceforth access the market directly and each state’s capability in raising resources will be market-determined and based on their respective financial health. This makes it imperative for states’ to have viable fiscal figures.

## Deteriorating Fiscal Health

The perilous fiscal health of state governments in India in recent years has led to concerns regarding the sustainability of state level government finances. The approach to fiscal sustainability analysis at the state level is based on 15 fiscal indicators which are generally expressed as ratios of gross state domestic product (GSDP) at current prices and can be classified into four major groups, namely, (1) deficit indicators, (2) revenue performance, (3) expenditure pattern, and (4) debt position [RBI 2007].

State finances, in general, had shown a progressive deterioration since the late 1990s and several factors can be attributed to worsening state finances, viz, growing revenue expenditure, particularly wages, salaries and pensions arising out of the implementation of the Fifth Pay Commission

award which saw salaries and pensions rising by about 60 per cent over three years, losses of state public sector enterprises (especially state electricity boards), and declining transfers from the central government. Besides, states were competing with each other in “exemption proliferating tax competition” resulting in a fall in the level of states’ own tax revenue relative to GDP. Further, subsidies provided by states are largely implicit and inadequate user charges have contributed to the deterioration in state fiscal health. The widening gap between revenues and expenditures saw states consequently resorting to borrowing at high nominal interest rates resulting in rising debt servicing costs which further exacerbated the worsening fiscal imbalance. Consequently, several measures have been undertaken to improve states’ finances, namely, the creation of a fiscal reform facility (2000-01 to 2004-05) to provide incentives to states to undertake medium-term fiscal reform, the introduction of a debt swap scheme over 2002-03 to 2004-05, and institutional measures such as the adoption of a rule-based fiscal policy through the enactment of fiscal responsibility legislations (FRLs).

## Tamil Nadu Scenario

Tamil Nadu enacted its FRL in 2003 and later amended it in 2005 to set its deficit targets along the lines of the recommendations of the Twelfth Finance Commission – eliminate the revenue deficit as a ratio of the GSDP by March 2009 and reduce the gross fiscal deficit as a ratio of GSDP to 3 per cent by March 2010 (and adhere to these targets thereafter). Also, Tamil Nadu decided to cap the total outstanding guarantees to 100 per cent of the total revenue receipts in the preceding year or at 10 per cent of GSDP whichever is lower. Further, Tamil Nadu introduced a medium-term fiscal plan (MTFP) which would have multi-year rolling target for the prescribed fiscal indicators [Reserve Bank of India 2005; 2006].

The fiscal sustainability of Tamil Nadu as analysed by Ianchovichina, Liu and Nagarajan (December 29, 2007) – hereafter ILN – and the response to their paper by Suresh Babu (March 15, 2008) use the

debt position approach. ILN have used Tamil Nadu as a case study to analyse the fiscal stress that has plagued Indian states in the late 1990s. As noted by ILN, "the fiscal crisis in Tamil Nadu was part of the widespread fiscal deterioration experienced by other Indian states" (p 111) towards the end of the 1990s. Further, ILN have discussed in detail the fiscal position of Tamil Nadu in the late 1990s as well as the measures taken by the state to improve the fiscal situation such as the enactment of the FRL and the MTFP. The analysis starts with a baseline covering the 23-year period 2003-04 to 2026-27 and examines fiscal sustainability by taking into account the key components of the fiscal accounts and how they respond to policy reform and shocks such as interest rate shocks, changes in contingent liabilities and pressures on the primary balance taking into account the interdependence between national and subnational policies (in terms of central revenue transfers). The paper notes that there has been an improvement in the fiscal situation of Tamil Nadu. Consequently, since April 2004 some critical reforms have been rolled back – free power to all farmers, reduction in power tariffs for domestic consumers, withdrawing income ceiling on access to the public distribution system among several other measures.

ILN further point out that while individually each of the shocks mentioned above may not pose a threat their combined effect may have serious consequences for debt sustainability. Hence one can, thus, infer that ILN suggest caution for the future. Suresh Babu (2008), however, in his response to ILN (2007) has raised questions regarding the articulation of the baseline simulation approach as well as the sanctity of the 23-year period employed by ILN in their paper. Using the maturity profile of the state's major liabilities – outstanding government securities and outstanding government market loans – over a medium term of 10 years (2004-14), he shows that the period 2012-14 could be years of fiscal stress while the overall picture looks favourable to the state. Suresh Babu (2008) further writes that, "with some fiscal discipline already in place, by the way of reducing market borrowings to finance the deficit, a further deterioration looks

unlikely in the long run even with variations in the interest rate" (p 77). Hence Suresh Babu in his response disagrees with the bleak scenario of the ILN paper and writes that "ambitious long-run projections based on unfounded assumptions and methods would result only in painting a bleak picture of the future when the present looks promising" and "rolling back of reforms is not harmful in times of faster growth" (p 77).

Given this backdrop we in this paper use the deficit indicators approach to analyse the fiscal sustainability of Tamil Nadu. This approach examines fiscal health through a wide variety of deficit indicators such as (1) gross fiscal deficit as a ratio of gross state domestic product, (2) revenue deficit as a ratio of GDP, (3) primary deficit as a ratio of GDP, (4) primary revenue balance as a ratio of GDP, (5) revenue deficit as a ratio of gross fiscal deficit, and (6) revenue deficit as a ratio of revenue receipts. This paper, though, focuses attention on the four major deficit indicators each of which provides a different facet of fiscal health, viz, the revenue deficit (RD) the primary deficit (PD) the gross fiscal deficit (GFD) and the primary revenue balance (PRB).

Tamil Nadu has seen persistent revenue deficit and gross fiscal deficit (with varying magnitudes) as a ratio of GDP since 1987-88 excepting the period 1993-94 to 1995-96 which saw improvements on both these deficit indicators and there have been improvements since 2004-05 as a consequence of the various fiscal reform measures discussed above. The impact of rising current and fiscal deficits has seen an increased interest burden and interest payments on an average for the period 2002-03 to 2006-07 account for nearly 16.70 per cent of revenue receipts. Table 1 presents the performance of the major deficit indicators (on an average) for 2003-04 to 2005-06 and the revised estimates for 2006-07 along with the median for each of these deficit indicators for the non-special category states.

It can be observed that on both counts – average for 2003-04 to 2005-06 as well as for 2006-07 (RE) – the performance of Tamil Nadu has either matched the median value or has been much better than the

median value except for the PRB for 2006-07 (RE). Nevertheless, it seems interesting to examine the fiscal sustainability of Tamil Nadu using the different deficit measures and analyse whether the current stance of fiscal policy adopted is sustainable, or in other words, can the state government continue indefinitely with this policy and still remain solvent.

The four deficit measures taken up for consideration for the fiscal sustainability analysis are defined as follows:

$$RD = \text{Revenue Expenditures} - \text{Revenue Receipts} \quad (1)$$

$$GFD = (\text{Revenue Expenditure} + \text{Capital Expenditure}) - \text{Revenue Receipts} \quad (2)$$

Following Karnik (2005), capital expenditure includes discharge of internal debt and repayments of loans to the centre as both of these are committed expenditures of the states and hence, should be included whilst considering the sustainability of state finances.

$$PD = GFD - \text{Interest Payments} \quad (3)$$

$$= [(\text{Revenue Expenditure} - \text{Interest Payments}) + \text{Capital Expenditure}] - \text{Revenue Receipts}$$

$$PRB = RD - \text{Interest Payments} \quad (4)$$

$$= (\text{Revenue Expenditures} - \text{Interest Payments}) - \text{Revenue Receipts}$$

Each of these deficit measures is studied for sustainability using the Hakkio and Rush (1991) approach (discussed earlier) which looks at the relationship between the expenditures and revenues that comprise these deficit measures in as ratios of net state domestic product (NSDP) and the deficit measures in real terms.

This paper contributes to the literature on sustainability of state level finances in India by examining sustainability of the various deficit indicators by applying unit

**Table 1: Tamil Nadu's Major Deficit Indicators (% of GDP)**

| Period                       | RD  | PD  | PRB  | GFD |
|------------------------------|-----|-----|------|-----|
| 2003-04 to 2005-06 (avg)     | 0.1 | 0.0 | -2.4 | 2.4 |
| Median value (avg) (2003-06) | 1.0 | 0.8 | -2.4 | 4.7 |
| 2006-07 (RE)                 | 0.1 | 0.5 | -2.2 | 2.7 |
| Median value (2006-07) (RE)  | 0.1 | 0.5 | -3.0 | 3.6 |

Negative sign indicates surplus in deficit indicators.

Source: Reserve Bank of India, 'State Finances: A Study of Budgets of 2007-08', November 2007.

root and cointegration tests – employing the standard test such as the Augmented Dickey-Fuller (ADF) as well as tests that determine stationarity and cointegration for series that could contain a structural break such as the Zivot-Andrews (ZA) and

Gregory-Hansen (GH) tests. The standard ADF test does not take into account the presence of structural break in the series and this could at times lead an error when the null hypothesis is not rejected. Hence, a series could be tested for unit root in the presence of structural break. A major problem while testing for stationarity in the presence of structural break is the timing of the break. Zivot and Andrews (1992) propose a test procedure in which the break point,  $k$ , is treated as an outcome of the estimation procedure designed to fit  $x_t$  to a certain trend stationary representation rather than exogenously. ZA consider the null hypothesis to be: a series  $x_t$  is  $I(1)$  without a structural break and the alternative hypothesis is that the series  $x_t$  can be represented by a trend stationary process with a single break in trend occurring at an unknown point in time [Mills 1999].

The Gregory-Hansen (1996) test looks at cointegration between variables even when there is a structural break or regime shift at an unknown point in time. GH test the null hypothesis of no cointegration with the alternative being: the presence of cointegration with a structural break or regime shift where the exact timing of the break or regime shift is not known (and to be determined as the outcome of the estimation procedure). This paper provides the theoretical framework and a brief description of the Hakkio-Rush (1991) approach and also contains the empirical evidence for Tamil Nadu. The variables used in the paper are given in the Appendix.

### Theoretical Framework

Budgetary deficits when incurred by governments are usually money and/or bond financed. Sustainability of the debt/deficit can be ascertained through the inter-temporal budget constraint. For simplicity, if we assume away money financing (in other words, assume that deficits are only bond financed), then the budget constraint of the government would be as follows:

$$G_t + (1 + r_t)B_{t-1} = R_t + B_t \quad (5)$$

where  $G_t$  is government expenditures,  $B_t$  government debt at the end of period  $t$ ,  $r_t$  rate of interest in period ' $t$ ', and  $R_t$  government revenue.

If we follow Wilcox (1989), the accounting identity that describes the accumulation of government debt would be:

$$B_t = (1 + r_{t-1}) B_{t-1} + (G_t - R_t) \quad (6)$$

$G_t - R_t$  non-interest (primary deficit) of the government

If  $q_t$  is the discount factor from period ' $t$ ' back to period zero and is known at time ' $t$ ', then

$$q_t = \prod_{j=0}^{t-1} (1 + r_j)^{-1}, q_0 = 1 \quad (7)$$

If each variable in (6) is discounted by  $q_t$  back to period 0 and multiplying (6) throughout by  $q_t$  we obtain:

$$q_t B_t = q_{t-1} B_{t-1} + q_t (G_t - R_t) \quad (8)$$

Let  $D_t$  now be the discounted value of the debt and  $DEF_t$  be the discounted value of the non-interest (primary) deficit, then (8) can be written as:

$$D_t = D_{t-1} + DEF_t \quad (9)$$

i.e., the change in the discounted value of debt should equal the discounted value of the primary deficit

Iterating (9) ' $N$ ' periods forward gives

$$D_{t+N} = D_{t-1} + DEF_t + \sum_{j=1}^N DEF_{t+j} \quad (10)$$

$$D_{t+N} = D_t + \sum_{j=1}^N DEF_{t+j} \quad (11)$$

$$D_t = D_{t+N} - \sum_{j=1}^N DEF_{t+j} \quad (12)$$

If the first term ( $D_{t+N}$ ) of (12) tends to zero in the limit (equation 13), then the current value of the debt equals the sum of expected future non-interest deficits or surpluses.

$$\lim_{N \rightarrow \infty} E_t D_{t+N} = 0 \quad (13)$$

$$D_t = \sum_{j=1}^{\infty} E_t DEF_{t+j} \quad (14)$$

Equation (14) is the present value borrowing (or the inter-temporal borrowing) constraint, which holds when the expectation of the discounted debt tends to zero in the limit. While looking at the issue of sustainability of the deficit, we are testing for violations of (13) or (14). According to Hamilton and Flavin (1986), if (13) or (14) were violated in data, they conclude that the borrowing constraint is not satisfied, and hence, the fiscal position not sustainable.

Equation (13) does not allow for Ponzi financing and hence the current debt has to be financed by surpluses in the future. Under the Ponzi scheme, government issues new debt when the old debt retires and still continues to finance deficit though issuance of debt. Therefore, if the limit term is not zero in (13) then government indulges in a Ponzi scheme. Alternatively, while equations (13) and (14) may exclude a permanent primary deficit, they may not exclude the permanent occurrence of a deficit measure inclusive of interest payments as long as the debt stock grows at a rate that is less than the rate of interest [Olekalns and Cashin 2000].

Hakkio and Rush (1991) provide an alternative framework to test for sustainability of the government budget constraint. According to Hakkio and Rush the deficit is sustainable when government revenues and expenditures inclusive of interest payments are each  $I(1)$  processes and cointegrated. They estimate the following cointegrating regression between federal government revenue and expenditure for the US over the period 1950:1 to 1988:4 and for two sub-samples: 1964:1 to 1988:4 and 1976:1 to 1988:4

$$R_t = a + b GG_t + \varepsilon_t \quad (15)$$

where  $R$ -federal government revenues, and  $GG$ -federal government expenditure inclusive of interest on debt.

They seek to determine if  $\hat{b} = 1$  in equation (15) and  $\varepsilon_t$  are stationary, i.e., are  $GG$  and  $R$  cointegrated. When  $GG$  and  $R$  are non-stationary then cointegration is a necessary condition to satisfy the present

**Table 2: Results of Unit Root Tests – ADF Test**  
(Null: Series has a unit root)

| Variable          | $\tau_1$ | $\phi_1$ | $\phi_2$ | $\phi_3$ | $\tau_\mu$       | Lag     | $\tau_\mu$ | Lag |
|-------------------|----------|----------|----------|----------|------------------|---------|------------|-----|
| A Ratios of NSDPC |          |          |          |          |                  |         |            |     |
|                   | Levels   |          |          |          | First Difference |         |            |     |
| TEXPG             | -2.02    | 2.05     | 2.15     | -1.87    | 1                | -3.56** | 1          |     |
| TEXAG             | -2.04    | 2.08     | 2.38     | -2.07    | 1                | -3.48** | 1          |     |
| REG               | -2.17    | 2.61     | 2.27     | -2.01    | 1                | -4.20** | 1          |     |
| RRG               | -1.86    | 1.84     | 2.30     | -1.94    | 1                | -3.37** | 1          |     |
| REAG              | -2.01    | 2.37     | 2.40     | -2.14    | 1                | -4.25** | 1          |     |
| B Real Terms      |          |          |          |          |                  |         |            |     |
| LTEXPR            | -3.24    | 5.32     | 4.13     | -0.07    | 2                | -3.56** | 1          |     |
| LTEXAR            | -3.20    | 5.14     | 3.53     | -0.23    | 2                | -3.39** | 1          |     |
| LRER              | -2.46    | 3.18     | 6.45     | -0.82    | 1                | -4.21** | 1          |     |
| LRRR              | -2.56    | 3.37     | 8.37     | -0.27    | 1                | -3.90** | 2          |     |
| LRERAR            | -2.25    | 3.12     | 7.51     | -1.36    | 1                | -4.17** | 1          |     |
| CV                | -3.41    | 6.25     | 4.59     | -2.86    |                  | -2.86   |            |     |

Critical values are at 5% level of significance.

\*\* Null hypothesis rejected at 5% level of significance.

Lag length is determined using AIC criterion.



value borrowing constraint. However, Hakkio and Rush (p 433) show that when  $\hat{b} < 1$  the limit of the undiscounted value of debt equals infinity and as the undiscounted value of debt gets large the

pairs of revenue and expenditure variables that are found to be difference stationary or  $I(1)$  processes under the ZA test as well do we proceed to the next step of testing for cointegration. This becomes

relevant as mentioned earlier in detail – the standard ADF test does not take into account the presence of structural break in the series and this could at times lead an error when the null hypothesis is not rejected. Hence, the concerned pairs of the revenue-expenditure series are tested for unit root in the presence of structural break which is done by the ZA test. Table 2

share in basic union excise duties reach a peak of 7.6 per cent in the union excise duty total divisible pool. As far as the early 1990s and revenues are concerned the break point of 1993 may be explained by the development that Tamil Nadu's share in central taxes which was above 3 per cent of GSDP has since 1993-94 fallen below 3 per cent of GSDP. Likewise, the break points for the expenditure variables seen in the early 1980s and early 1990s.

The award of the Fourth Pay Commission which saw a parity with central scales in 1989 could explain for the break points observed for the expenditure variables in the early 1990s. Further since the 1970s Tamil Nadu has adopted a policy which has seen large current expenditures at the cost of capital outlays. In the first half of the 1980s (1980-85) current expenditure plus loans for consumption saw a slight decline to 68.3 per cent of gross total outlays from 69.5 per cent in the 1970s. While the latter half of the 1980s (1985-90) saw this ratio rise substantially to 74.6 per cent of total gross outlays [Guhan 1992, Ramakrishnan 1999].

Consequently, the next step of examining sustainability using the Hakkio and Rush (1991) approach would be to estimate a cointegrating equation similar to equation (15) with the concerned revenue expenditure variables for each of the four deficit indicators. The results of Table 3 enables us to examine all the four deficit indicators when considered in real terms for sustainability, while when the revenue and expenditure variables were considered as ratios of NSDP with revenue receipts (RRG), revenue expenditures

**Table 3: Results of Unit Root Tests – (ZA) Test**  
(Null: Series is  $I(1)$  without a structural break)

| Variable               | ZA <sub>A</sub> | Lag | ZA <sub>B</sub> | Lag | ZA <sub>C</sub> | Lag |
|------------------------|-----------------|-----|-----------------|-----|-----------------|-----|
| <b>A Ratio of NSDP</b> |                 |     |                 |     |                 |     |
| TEXPG                  | -4.05 (1994)    | 0   | -2.63 (1984)    | 0   | -3.39 (1994)    | 0   |
| TEXAG                  | -4.13 (1994)    | 0   | -2.74 (1984)    | 0   | -3.48 (1981)    | 0   |
| RRG                    | -4.84 (1981)**  | 0   | -3.12 (1984)    | 0   | -4.79 (1981)    | 0   |
| REG                    | -4.81 (1994)**  | 0   | -3.82 (1993)    | 0   | -5.12 (1994)**  | 0   |
| REAG                   | -4.81 (1994)**  | 0   | -3.82 (1993)    | 0   | -5.19 (1994)**  | 0   |
| <b>B Real Terms</b>    |                 |     |                 |     |                 |     |
| LTEXPR                 | -4.20 (1994)    | 0   | -3.77 (1976)    | 0   | -4.33 (1976)    | 0   |
| LTEXAR                 | -4.50 (1994)    | 0   | -3.48 (1984)    | 0   | -4.13 (1994)    | 0   |
| LRRR                   | -4.68 (1981)    | 0   | -4.06 (1993)    | 0   | -4.69 (1981)    | 0   |
| LRER                   | -3.97 (1990)    | 0   | -3.74 (1993)    | 0   | -4.47 (1990)    | 0   |
| LREAR                  | -3.72 (1994)    | 0   | -4.08 (1993)    | 0   | -4.60 (1991)    | 0   |
| CV 1%                  | -5.43           |     | -4.93           |     | -5.57           |     |
| 5%                     | -4.80           |     | -4.42           |     | -5.08           |     |

\*\* Null hypothesis rejected at 5% level of significance.  
Years in parentheses ( ) are the break points using the ZA procedure.  
Lag length is determined using AIC criterion.

incentive to default on part of the government increases, especially when revenues and expenditures are expressed relative to real GNP or population. Thus, though  $\hat{b} < 1$  is consistent with a strict interpretation of the government's inter-temporal budget constraint, it is inconsistent with the requirement that the debt-GNP ratio must be finite, and therefore, the government will find it difficult to market its debt.

### Empirical Evidence

The sustainability of the finances of Tamil Nadu has been analysed for the period 1970-71 to 2005-06 using the Hakkio-Rush approach (equation 15). Hence, it is of interest whether the concerned revenue-expenditure variables for each of the deficit measures defined above are cointegrated. The variables employed in the study and listed in the Appendix are considered (1) as ratios of NSDP with a suffix 'g' and in (2) real terms in their logarithmic form with the pre-fix 'L' and suffix 'r'. Since data on GSDP was available only since 1980-81, the variables were considered as ratios of NSDP and the NSDP deflator was used to obtain the real variant of the revenue and expenditure variables.

The initial first step, therefore, is to examine the revenue and expenditure variables for stationarity using the ADF and the ZA tests. Only for the concerned

(p 133) and Table 3 present the results of the unit roots tests – Augmented Dickey-Fuller (ADF) test and the ZA test, respectively.

The results of the standard ADF test (Table 2) for revenue and expenditure variables for both as ratios of NSDP and in real terms reveal that all the concerned variables are difference stationary processes or  $I(1)$ . The results of ZA test (Table 3), on the other hand, indicate that when considered in real terms all the revenue and expenditure variables are  $I(1)$  process, while when considered as ratios of NSDP the ZA test finds that RRG, REG and REAG variables reject the null hypothesis, and are in fact series that are  $I(0)$  with a single structural break. The Zivot-Andrews test yields structural break points in the years covering the early 1980s and early 1990s. As regards the revenue variable – revenue receipts – the break points of the early 1980s coincide with the outstanding performance Tamil Nadu displayed in terms of tax efforts, where the own tax revenue collections of the state as a ratio of NSDP was the highest at 11.5 per cent compared to the average for major states at 7.5 per cent. Besides, the early 1980s also coincide with the period of the Seventh Finance Commission (1979-84) which saw Tamil Nadu's

**Table 4: Results of the Gregory-Hansen Cointegration Test**  
(Real terms)

|           | LRRR – LRER<br>(RD) | LRRR – LREAR<br>(PRB) | LRRR – LTEXAR<br>(PD) | LRRR – LTEXPR<br>(GFG) |
|-----------|---------------------|-----------------------|-----------------------|------------------------|
| Model I   | -3.29<br>(1990)     | -3.26<br>(1988)       | -3.20<br>(1992)       | -4.77**<br>(1983)      |
| Model II  | -3.83<br>(1983)     | -3.72<br>(1983)       | -3.82<br>(1997)       | -4.97<br>(1983)        |
| Model III | -4.12<br>(1984)     | -4.07<br>(1985)       | -4.34<br>(1999)       | -5.46**<br>(1999)      |

Critical Values GH test: \*\* 5% level of significance.  
Model I -4.61, Model II -4.99, Model III -4.95.  
Years in parentheses indicate the break points using the GH procedure.

(REG) and revenue expenditures adjusted for interest payments (REAG) being  $I(0)$  processes and as per the deficit measures defined earlier it is not possible to test any of the deficit indicators for cointegration.

The results of cointegration using the GH test are in Table 4 (p 134).

The results of the GH test, which tests for cointegration in the presence of a structural break or regime shift (where the time of the break is to be determined by the estimation procedure) present a rather worrying scenario on the fiscal sustainability front for Tamil Nadu using the deficit indicators approach. With the exception of the gross fiscal gap none of the other three measures of deficit – viz revenue deficit, primary deficit and primary revenue balance (the revenue deficit adjusted for interest payments) is found to be sustainable. The sustainability shown on the gross fiscal gap, however, needs to be considered with caution as the gross fiscal gap measure defined here though slightly modified (capital expenditures, here, include the discharge of internal debt and repayments of loans to the centre) compared with the traditional/official definition of the gross fiscal gap does not completely reveal the extent of fiscal stress of the state as it does not take into consideration the several quasi-fiscal activities such as government guarantees and significant off-budget liabilities of state level financial institutions which finance infrastructure development and investment projects. Government guarantees in Tamil Nadu to state owned enterprises, state boards and corporations and cooperative institutions amounted to Rs 6,329.09 crore as on March 31, 2006. Additional Rs 1,000 crore were guaranteed in the year 2006-07 taking the total amount of guarantees in Tamil Nadu in March 2007 to Rs 7,329.09 crore (nearly 2.98 per cent of GSDP in March 2007). Such guarantees and quasi-fiscal activities are a pointer to the hidden fiscal burden on state finances. Further, as can be observed from Table 4, the regime shift in has taken place in 1983 (Model i) and 1999 (Model iii). The availability of increased receipts partly due to the high own tax revenue collections of the state combined with the awards of the Seventh Finance Commission (1979-84) may explain for the regime shift of the early 1980s while in 1999 (late 1990s) it could be attributed to the impact of the awards of the Fifth Pay Commission which put tremendous pressure on state finances

along with declining transfers from the central government.

### Conclusions

The paper, thus, has examined the issue of sustainability of government finances for Tamil Nadu using the deficit indicators approach. It seeks to answer whether it is possible for Tamil Nadu to continue its current expenditure and revenue paths indefinitely and remain solvent given the fact that Tamil Nadu performance has matched or has been better than the median value for non-special category states (Table 1). While we agree adherence to a rule based fiscal policy such as the fiscal responsibility legislation and the MTFP has resulted in fiscal consolidation in recent years, the question is can the state actually afford to roll back some of the crucial fiscal reforms? The answer would be the state has to be respond with caution given that three of the four major deficit indicators, namely, the revenue or current deficit which indicates the extent of government saving, the primary deficit (or non-interest deficit) which excludes the past fiscal burden in terms of interest payments and attempts to measure the current discretionary budget stance and the primary revenue balance (non-interest revenue balance) have been found to be unsustainable. In other words, it may be difficult for the government to continue on its current revenue and expenditure paths indefinitely and remain solvent. Further, the sustainable scenario obtained for the gross fiscal gap too has to be viewed with caution given that this measure of the deficit as defined in this paper accounts for discharge of internal debt and repayment of loans still does not take into account the impact of government guarantees and other off-budget liabilities which have the

potential to reflect themselves in government accounts. In conclusion, while Tamil Nadu's performance on the deficit indicators may be encouraging since 2004-05 the overall picture still remains disconcerting and in a sense the findings of this paper concurs with the need for caution that has been suggested by ILN (2007).

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### Appendix

List of variables used in the paper. Prefix 'L' denotes variables considered in logarithmic form

Variables as a Ratio of NSDP

|       |  |
|-------|--|
| TEXPG | Total expenditures as a ratio of NSDP                                  |
| TEXAG | Total expenditures exclusive of interest payments as a ratio of NSDP   |
| REG   | Revenue expenditure as a ratio of NSDP                                 |
| RRG   | Revenue receipts as a ratio of NSDP                                    |
| REAG  | Revenue expenditures exclusive of interest payments as a ratio of NSDP |

Variables in Real Terms

|        |  |
|--------|--|
| LTEXPR | Real total expenditure   |
| LTEXAR | Real total expenditure exclusive of interest payments of states' |
| LREAR  | Real revenue expenditure of states'                              |
| LRRR   | Real revenue receipts of states'                                 |
| LREAR  | Real revenue expenditure exclusive of interest payments          |