MEASUREMENT OF SUBSIDY
A STUDY OF KERALA IN THE CONTEXT OF FISCAL IMBALANCE

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M.Phil. Programme in Applied Economics

2004-06

CENTRE FOR DEVELOPMENT STUDIES

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Dissertation submitted in partial fulfilment of the requirements for the Degree of
Master of Philosophy in Applied Economics of the Jawaharlal Nehru University

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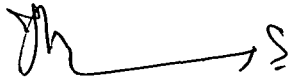
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I hereby affirm that the work for the dissertation, **Measurement of Subsidy – A Study of Kerala in the context of Fiscal Imbalance,** *being submitted as part of the requirements of the M.Phil Programme in Applied Economics of the Jawaharlal Nehru University, was carried out entirely by myself and has not formed part of any other Programme and not submitted to any other Institution/University for the award of any Degree or Programme of Study.*
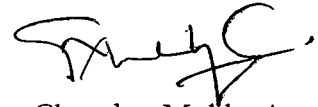
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Certified that this study is the bona fide work of Diana Abraham, carried out under our supervision at the Centre for Development Studies.

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ACKNOWLEDGEMENT

ABSTRACT OF THE DISSERTATION

MEASUREMENT OF SUBSIDY: A STUDY OF KERALA IN THE CONTEXT OF FISCAL IMBALANCE

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This study is an attempt to measure the quantum of subsidy in both forms, explicit and implicit, in the context of poor fiscal performance of States.

Subsidy includes not only the explicit component accounted in the budget, but several hidden elements. The budgetary definition of subsidy includes transfers to departmental undertakings but leaves out significant resource flows to public enterprises. Borrowings by public enterprises from the market or financial institutions are guaranteed by the government. Default on repayment by public enterprises will mean the liability gets passed on to the State, resulting in resource flows through the budget.

The excess of cost of providing a publicly produced good or service over the recoveries from the sale of that good or service is referred to as implicit subsidy. Although the methodology of arriving at implicit subsidy has many inconsistencies, earlier studies indicate that implicit subsidy is very high and that government services are provided almost free of charge.

In this background, this study examines the question of measurement of subsidy in the particular case of Kerala. The specific objectives of the study are (1) to sketch the fiscal imbalance of Kerala and relate the role of subsidy thereon, (2) to estimate explicit budgetary subsidy and power sector subsidy as a part of explicit subsidy, and (3) to offer a critique of the available estimates of implicit subsidy and in doing so suggest a methodological improvement in arriving at implicit subsidy estimates.

Examination of the State budget reveals that explicit budgetary subsidy is small, but this is because it is narrowly defined. When we identify subsidy received by particular State enterprises from their books of account, it is found that the subsidy in the budget is greatly under reported. We also find that subsidy tends to be used as a tool to cover losses of State enterprises. Losses that are left uncovered by subsidy are financed by loans from financial institutions and are guaranteed by the State government. Thus not only subsidy, but also public sector debt has a significant impact on the State's finances.

We offer two forms of refinement in estimating implicit subsidy – restricting the scope of subsidy to Non-merit services, and suggesting a different method to arrive at the depreciation cost of capital. Estimation of implicit subsidy using the refined methodology suggests that quantum of implicit subsidy is much smaller than what earlier studies have estimated. The lower magnitude of the new estimates is due to two reasons. One, considering only Non-merit services in the purview of subsidy reduces its quantum, and this is particularly relevant for Social Services. Most of the sub-heads under Social Services are Merit services with high levels of externalities and therefore are excluded from subsidy. The second reason for lower magnitude of subsidy is the method of valuing capital, particularly relevant to Economic Services. Tests for sensitivity show that the new estimates of implicit subsidy are sensitive to the use of parameters such as interest rate and proportion of capital generating revenue yielding assets.

The study concludes that the quantum of subsidy is highly sensitive to its definition and methodology of measurement. Conceptual clarity is required before subsidy is used as a target variable to address fiscal imbalance.

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GLOSSARY

AP	Annual Plan
BE	Budget Estimate
BPL	Below Poverty Line
EFC	Eleventh Finance Commission
FCI	Food Corporation of India
GDP	Gross Domestic Product
GFD	Gross Fiscal Deficit
GSDP	Gross State Domestic Product
KSEB	Kerala State Electricity Board
KSRTC	Kerala State Road Transport Corporation
LPG	Liquefied Petroleum Gas
MRP	Maximum Retail Price
NSDP	Net State Domestic Product
PD	Primary Deficit
PDS	Public Distribution System
PSBR	Public Sector Borrowing Requirement
PSU	Public Sector Undertaking
RBI	Reserve Bank of India
RD	Revenue Deficit
RE	Revised Estimate
RPS	Retention Price Scheme
SEB	State Electricity Board
SNA	United Nation's System of National Accounts
SPSU	State Public Sector Undertaking
SRTU	State Road Transport Undertaking
TFC	Tenth Finance Commission
1 crore	= 10,000,000
1 tonne	= 1000 kilogram

CHAPTER 1

INTRODUCTION

1.1 The Context

Poor fiscal performance and its impact on macroeconomic stability at the national and sub national levels of government is a subject that is receiving increasing attention in the literature on fiscal management in India. Most recent studies on the subject include that of Ahluwalia (2000), Rao (2002) and Chelliah (2005). The importance of the subject is self evident from the fact that the Terms of Reference (ToR) of the last three Finance Commissions i.e. Tenth, Eleventh and Twelfth, required them to suggest ways and means whereby the governments, collectively and severally, may bring about a restructuring of the public finances so as to restore budgetary balance and maintain macroeconomic stability. The imbalance between revenue and expenditure sides of government budgets is the primary symptom of poor fiscal performance. In evaluating the fiscal performance therefore, both revenue and expenditure sides have received attention by factoring in subsidy as an important element. The revenue side is affected to some extent by the pricing of government services, which are subsidised on the ground of public welfare. Subsidy as a component also adds to the expenditure side of the budget. Thus viewed, the quantum of aggregate subsidy – implicit and explicit assumes importance while studying the fiscal performance of Centre or State governments. Naturally, a part of the Indian literature has been concerned with the estimation of subsidy involved in the budgets of the Centre and States. To place this study on measurement of budgetary subsidy, in the context of fiscal imbalance in Kerala, it is appropriate to attempt a short review of the prominent works on revenue and expenditure sides of the government budgets, of the Centre, States and the combined picture at all-India levels.

1.2 Performance of Revenue

On the revenue side we first consider the tax policy. In the early years after independence, tax policy was driven by the dual motives of achieving a socialist pattern of society and mobilising resources for planned economic development. However the high direct tax rates and innumerable commodity-specific rates of indirect taxes failed to push up tax mobilisation. In 1971-72 despite the effective marginal income tax rate reaching as high as 97.75 per cent, revenue collection was stuck at 1 per cent of GDP (Acharya, 2005). There have been reforms in the tax structure particularly in terms of efficiency, equity and transparency in the last three decades. The mid-1990s witnessed modern tax reforms in India with the laying of the report of the Tax Reforms Committee chaired by Raja Chelliah (1991-1993). The recommendations of this Committee resulted, over the period of a decade, in substantial reduction in rates of personal income tax and corporate tax on the direct tax side. On the indirect tax side, import duties were reduced, the multiple rate excise structure was transformed into a single rate central value added tax (CENVAT), service tax was introduced and the number and the scope of exemptions and preferential rates was greatly reduced. Despite the enormous progress there remained an unfinished agenda of reducing import duties to international levels, integrating the CENVAT with State VATs and creating a uniform system of taxing goods and services to facilitate the development of a common market.

The progress in the reform of India's tax system on the lines mentioned above has however not improved tax effort commensurate to taxable capacity. Purohit (2006) compares taxable capacity and tax effort of Government of India with different countries having similar GDP levels, indicating similar stage of development. In this study India ranked as low as 14 out of 19 countries examined. The all-India tax-GDP ratio (combined for Centre and States), which was 15.98 per cent in 1989-90, declined to 13.97 per cent in 2001-2002. The decline has been entirely due to the fall in tax effort of the Centre. The Centre's share in total tax collection in the band of 65 to 70 per cent was stable for the period 1957 to 1992. After 1992 the Centre's share in total tax collection steadily declined and in 2001-2002 it dipped below the 60 per cent mark (Rajaraman, 2004). There is evidence of revenue loss arising from the reform process in the economy in mid 1990s. The indirect tax-GDP ratio for the Centre declined from 8.56 per cent in 1989-90 to 5.13 per cent in 2001-2002. This decline brought about by fall in tax effort for customs and excise duties is attributed to revenue loss on account of reform of external trade tariffs (Rajaraman, 2004).

Moving on from tax revenue to non-tax receipts, the combined non-tax receipts of the Central and State governments was 3.8 per cent of GDP in 2003-04. This proportion

has remained stable from 1990-91 when it was 3.2 per cent. The non-tax revenue consists of user charges for general, social and economic services, and interest and dividend receipts from the public sector. The non-tax receipts contributed 20 per cent of total revenue receipts in 2003-04. This has been only a slight improvement from 17 per cent in 1990-91[1]. A study (Mohan, 2004) tracing Central government receipts reveals that non-tax receipts have been stagnant for the period 1970-71 to 2002-03. It is generally held that the inability to recover reasonable returns from the large investments has been the major reason for the low growth in non-tax revenues (Rao, 2002). The potential of non-tax revenues as a buoyant source of revenue is virtually untapped by the States and much greater attention must be paid on non-tax receipts for resource mobilisation (Tenth Finance Commission, para 2.23, page 6). The foregoing snapshot of fiscal performance on the revenue side highlights the significance of factoring in non-tax component of revenue – implying indirectly the subsidisation of government services – to explain poor fiscal performance.

1.3 Performance of Expenditure

The performance of the Centre and States on the expenditure side has also been a cause for concern. The Tenth Finance Commission (TFC) noted that the principle factor underlying the fiscal imbalance is the unbridled growth of government expenditure, particularly the revenue expenditure. A long period analysis (Mohan, 2004) of government expenditure for the period 1970-71 to 1999-2000 reveals that the total expenditure of Centre and States as percentage of GDP increased from 22 to 32 per cent. The gap between revenue and capital expenditure widened in the 1990s indicating that current expenditures grew at the expense of productive investment.

Revenue expenditure exhibited a 'step like' behaviour over the last three decades (TFC, 1995): in the mid 1970s revenue expenditure was 15 per cent of GDP, it rose steadily till 1987-88 when revenue expenditure-GDP ratio became 27 per cent and stabilised at that level, to fall marginally to 24 per cent in 2000-2001[2]. State governments also experience revenue expenditure rising disproportionately to revenue receipts, though the intensity of fiscal imbalance differs across States. Interest, wages and salaries have emerged as the major components of expenditure and because of their 'committed' nature have imparted a downward rigidity and inflexibility to the level of expenditure. Given the limited borrowing ability, States have tried to make up the revenue expenditure imbalance by compressing capital expenditure. The fiscal imbalance has also cut into maintenance expenditure on the revenue budget. Maintenance expenditure has been reduced to a residual head and this has had a visible impact on the state of infrastructure (TFC, 1995).

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[1] Source: Economic Survey 2005-06, Government of India, table 2.12, page 47.
[2] Source: Economic Survey 2005-06, Government of India, table 2.12, page 47.

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1.4 Situation of Fiscal Imbalance

The lacklustre performance of revenue and expenditure has created a situation of fiscal imbalance in the economy. The Tenth Finance Commission (TFC) Report observed that "the magnitude of aggregate deficits – revenue and fiscal – had reached levels in the late eighties that set the economy on a medium term path of stagflation and a recurring balance of payments problem." (para 2.5, page 4). To illustrate, in 1982-83 the economy moved from a state of revenue surplus to continuous revenue deficits. While in 1975-76 the revenue surplus was 2.5 per cent of GDP, in 1990-91 the revenue deficit reached 3.6 per cent.

The Eleventh Finance Commission (EFC) noted that "the secular decline in fiscal balance of the economy that had set in during the eighties... has not only persisted but got accentuated in the closing years of the nineties, with some of the key deficit indicators climbing to unprecedented 'highs'." (para 2.5, page 7). Data[3] shows that in 1990-91, the combined Gross Fiscal Deficit (GFD) was 10.49 per cent of Gross Domestic Product (GDP)[4]. The GFD-GDP ratio declined to 7.02 per cent in 1996-97 after which it steadily increased. In 1999-2000, GFD-GDP ratio increased to the level that prevailed in 1990-91. The other deficit indicators like Primary Deficit-GDP and Revenue Deficit-GDP ratios also were at 1990-91 levels after declining in the early 1990s. Reform measures introduced after 1990-91 particularly policies relevant to government finances such as those relating to tax reform and reduction in fiscal deficit had only an initial impact in addressing these variables. Since 1999-2000, the combined GFD and RD ratios have been on an increasing trend. The growing deficits have led to a spiral of rising debt, escalating interest cost and further expansion of deficit.

1.5 Debt Position of Centre and States

For the Central government, the debt-GDP ratio was 28.84 per cent in 1950-51. By 1960-61, this increased to 38.12 per cent. After hovering in the range of 40 to 45 per cent till 1980-81, the debt-GDP ratio of the Central government crossed the 50 per cent mark in 1986-87. It has since been within the band of 50 to 55 per cent. In 2001-02, the debt-GDP ratio was 55.36 per cent[5]. Rangarajan and Srivastava (2003) examined the relative contribution of cumulated primary deficits and the cumulated effect of growth rate-interest rate differential on outstanding liabilities of the Central government for the period 1951-52 to 2001-02. They found that the accumulation of Central debt relative to GDP since 1955-56 was entirely due to cumulated primary deficits. The

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[3] Source: Reserve Bank of India, Handbook of Statistics on Indian Economy.
[4] GDP at factor cost
[5] Source of data: Rangarajan and Srivastava (2003)

excess of real growth rate over real interest rate absorbed a significant part of the potential build up of debt due to cumulated primary deficits. Given the narrowing gap between growth rate and interest rate attaining a balance on the primary account was imperative for stabilising debt-GDP ratio at current levels.

As regards States, their revenue and fiscal deficits follow the pattern similar to that of the Centre (Rajaraman, 2005). To illustrate, 60 per cent of borrowed funds of the States was used to finance current expenditures in 2000-01. At the same time the share of capital expenditure in GDP was as low as 1.8 per cent in 2000-01. Chakraborty (1995) examined indebtedness of four[6] of the fourteen major States in India for the period 1980-81 to 1992-93. The study found that there was overwhelming predominance of Central loans in total debt of these States. The mounting repayment obligation and accumulated interest charges progressively reduced net loan amounts received from the Centre. Rajaraman (2005) analysed debt trajectory of States in India for quinquennial periods 1992-97 and 1997-2002, corresponding to the terms of Eighth and Ninth five year plans respectively. The study found that for the period 1997-2002 the average debt-GSDP ratio for Non-special Category States taken together was 31.9 per cent. This was an increase from 25.3 per cent for the period 1992-97. Similarly, average debt-GSDP ratio of Special Category States increased from 41.2 per cent in 1992-97 to 42.8 per cent in 1997-2002. Five of the major States – Bihar, Orissa, Punjab, Rajasthan and Uttar Pradesh recorded debt-GSDP ratio of more than 50 per cent in 2002-2003. For all States taken together the interest bill as a proportion to revenue receipts was 25.3 per cent in 2002-2003. The interest rates paid by Special Category States on their debt stock was consistently higher than interest rates for major States, and this gap was growing. The study observed that all the States, with some possible exceptions, were in need of fiscal correction. "The difference lies only in the degree and urgency of corrective action called for" (Rajaraman, 2005; page 48).

1.6 Causes of Fiscal Imbalance

The Eleventh Finance Commission recognised a two-fold concern behind its mandate to suggest measures for restructuring: the persistence of unsustainable deficits at both Central and State levels; and the deterioration in the composition of government expenditure with a disproportionately large share of receipts getting pre-empted by interest payments and unproductive expenditure leaving too little for the social sectors and much needed investment (Chapter II, page 6). Many observers have noted that it is primarily the responsibility of States to make continuous efforts to

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[6] The four states studied were Maharashtra, Tamil Nadu, Kerala and West Bengal.

improve their revenue base and curtail expenditure and this requires a change in the emphasis and priorities of fiscal operations.

Several factors have been recognised as causing the fiscal deterioration. The Eleventh Finance Commission recognised two proximate causes, one was the revision of salaries and pension of government employees following the Fifth Central Pay Commission, and the other was the cyclical recession in economic activity retarding the growth of tax revenues at both levels of the government. Reserve Bank of India (Report of Currency and Finance, 1998-99) observed that the factors affecting budget outcomes are structural and not cyclical. The structural weakness of Centre's finances has its roots in inadequate revenue growth in the presence of rising expenditure. On the revenue side, erosion of tax-GDP ratio and stagnation of non-tax revenue, and on the expenditure side periodic upward revision of government emoluments, upward shift of interest rates on government borrowing and burgeoning subsidies, explicit and implicit have contributed to the structural weakness. Among other factors recognised as contributing to fiscal imbalance are contingent liabilities of Central and State governments, posing a threat to the creditworthiness and sustainability of debt, the inadequate rate of return on capital investment, and poor cost recovery of public services.

1.7 Subsidy – Review of Issues

In the context of fiscal imbalance, the question of subsidies has been discussed in literature. The Ninth Finance Commission noted that food, fertiliser and export subsidies, accounting for a major share of Central subsidies has been rising rapidly and in future subsidies might have to be targeted to the poor only. The Tenth Finance Commission recognised the heavy subsidisation of power and irrigation as unjustified and called for a national consensus on irrigation and power rates. The Eleventh Finance Commission recognised apart from explicit subsidies, the subsidies implicit in the under pricing of public services. The Twelfth Finance Commission sponsored a study to examine the universal subsidies on food, fertiliser and petroleum products and replace it by selective relief targeted exclusively to the economically weakest sections of the community.

The Expenditure Reforms Commission (2000-2001) in its various reports suggested measures to downsize the government to address the problem of high growth of non-developmental expenditures. In its report on rationalising fertiliser subsidies (2000) it advocated a new fertiliser policy with the goal to bring fertiliser prices charged to farmers to the level of import parity price. It suggested replacing the Retention Price Scheme (RPS) with an easily enforceable system that provides

incentives to manufacturers to be cost efficient, and ensures a desired level of self-sufficiency with minimal support from the Government. The Commission suggested a gradual transition to a decontrolled fertiliser industry that can compete with imports with a small level of protection.

The Expenditure Reforms Commission's report on food subsidy (2000) estimated that at 2000-01 sale price to the BPL population, the consumer subsidy bill could go up to Rs. 7,500 crore when the off-take reached 14 million tonnes. The food subsidy bill has three elements – consumer subsidy i.e. subsidy incurred on the supply of foodgrains through PDS at below Food Corporation India's (FCI) economic cost, cost of buffer operations of FCI and the cost of inefficiencies of FCI. With the total stock levels touching 44 million tonnes, the average buffer stock in 2000-01 could be around 17 million tonnes imposing a carrying cost burden of around Rs. 3,100 crore on the Government. The cost incurred by FCI on transport, storage, interest, staff overheads etc. would be a staggering Rs. 6,500 crore. The Commission recommended better targeting of food grains and administrative arrangements to ensure that subsidised supplies do indeed reach targeted population, thus generating savings in any of the three levels of food subsidy and reducing the food subsidy bill.

A study (Ramachandran, 2004) sponsored by the Twelfth Finance Commission suggested narrowing the focus of PDS to include only the poorest of the poor, phasing out the system of statutory price fixation, working towards transparency over procurement price and operations, and reducing the food grains stockpile to the absolute minimum level necessary to take care of calamities. The study suggested that fertiliser subsidy must be transformed into an efficiency booster and not be used to reward inefficiency. The study also recommended scrapping the subsidy to LPG and subsidising kerosene only to the poorest of the poor.

A different strand of literature promotes the use of subsidies as a welfare enhancing tool. For instance PDS plays a critical role in distribution of food grains and smoothens supply and stabilises prices in response to fluctuations in production (Radhakrishnan and Subbarao, 1997), the Central government is able to react to regional crises created by drought or flood (Besley and Burgess, 2002). Bhalotra (2002) investigates the effect of food subsidy given through PDS on child malnutrition in India, in the background of high incidence of child malnutrition in the country and the need to revamp PDS; and found that food expenditures have a significant impact on child health, whether measured as weight or height for age. As is evident the issue of subsidies can be discussed from different perspectives. Discussions at the policy level are however limited to streamlining subsides to restore fiscal balance.

As stated earlier, subsidies arise both on the expenditure side and revenue side. On the expenditure side there are resource flows from the budget in the form of explicit cash flows (as in the case of food and fertiliser subsidy), procurement subsidies (such as purchase of goods at assured prices higher than market prices) and equity subsidies (arising from investment in government companies). On the revenue side subsidies take the form of non-recovery of investment and under-pricing of government services. The non-recovery from the provision of government services has been referred to as implicit subsidy in literature. A comprehensive study of subsidy must examine both these variants.

Apart from subsidy on food and fertiliser which are often discussed at the policy level, government investment in public sector undertakings and contingent liabilities arising from loan guarantees to public enterprises are cited as exerting unhealthy pressure on government finances. A study (Banerji and Chaubey, 2004) sponsored by the Twelfth Finance Commission on the state of public sector undertakings examined the fiscal impact[7] of 1053 State Public Sector Undertakings (SPSUs) in 25 States in 2000-01. It was found that the 1053 SPSUs had total investment of Rs.20,922,7.35 crore i.e. 11 per cent of GDP at current prices and Rs.188,579.52 crore of capital employed at the end of 2000-01. The outstanding losses amounted to Rs.33,845 crore, which was more than half of all States' total share capital. Nearly 90 per cent of the SPSUs share capital was held by the State governments with fresh infusions leading to a 57 per cent increase in States' share holdings in the last six years. State debt to SPSUs however declined slightly in recent years, which was more than offset by a steep increase in State guarantees to SPSUs. Outstanding guarantees increased three-fold in last five years reaching the figure of Rs.101,342.98 crore in 2000-01. Subsidies and grants to SPSUs exceeded Rs.16,000 crore in 2001-02.

The huge amount of budgetary funds flowing to public sector undertakings (PSUs) and locked up in this sector add to the already serious problem of fiscal imbalance. Moreover the poor rate of return contributes negligibly to the States' non-

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[7] Fiscal impact was captured by four variables - Fiscal Impact Due to Annual Outflows (FIDAO), Total Impact on State Finances (TISF), Gross Fiscal Impact on State Finances (GFISF). FIDAO is defined as the sum of outflows resulting from change in State equity and debt, State subsidy & grants and waiver of dues to SPSUs. TISF is defined as the sum of FIDAO plus the opportunity cost of investments in SPSUs. The difference between the effective rate of interest that the State government pays on its borrowings and the effective rate of return on investments in SPSUs is the per Rupee opportunity cost of investments. GFISF adds the value of guarantees given by the State to SPSUs during the year to the value of Total Impact on State Finances calculated earlier

tax revenue (Rao, 2002). Two important public enterprises that have attracted the attention of policy makers are the State Electricity Boards (SEBs) and State Road Transport Undertakings (SRTUs). These State enterprises are of concern because unlike other government services these enterprises have the entire production process from the input stage to the final output being serviced by the State machinery, consequently giving rise to questions about efficiency and leakage during production. The Eleventh Finance Commission noted the poor performance of SEBs and SRTUs and considered them as one of the underlying causes of the States' poor fiscal performance.

Government provision of Social and Economic Services are costly. The poor recovery from the provision of these services implies hidden subsidy to consumers. The recovery rate of services provided by Centre and States together was 7.21 per cent in 1994-95, implying that 92 per cent of the cost of providing government services was not recovered and hence went as subsidy to the consumers of these services. The performance of the Centre in recovery rate was better at 10.59 per cent while the States recovered only 5.58 per cent of what they spent (Srivastava and Sen, 1997). These services, provided under the head of Social and Economic Services in the budget, are not targeted as in the case of explicit subsidy on food or fuel and are available to all individuals. These include among others, all levels of education, public health, urban development, agriculture and allied activities, public transport and communication etc. State provision of services is thus extensive and non-recovery of cost has a telling effect on States' finances.

The foregoing review of literature puts in perspective the significance of subsidy in determining the fiscal performance of the government – Centre and States. It is clear that poor fiscal performance of the Centre or States has to some extent be explained by the quantum of subsidy. Here, both explicit and implicit subsidy are important, though the attention of policy discussions has generally centred on explicit subsidy i.e. subsidy as accounted in the budget. There is however gross underestimation in the quantum of subsidy in the budget. Subsidy as accounted in the budget indicates only the subsidy given to government administrative departments. This incomplete definition leaves out assistance and resource transfers to public corporations, which play the same role as subsidy. The unrecovered cost of government provision of services also does not feature as subsidy in the budget. Although there is no monetary transfer to consumers, the expenditure on these services constitutes a resource flow through the budget. The excess expenditure over revenue of government services has been termed as implicit subsidy in the literature; however the estimates of implicit subsidy are wrought with measurement problems.

1.8 Research Problem and Objectives

The present study has therefore selected as a research problem the measurement of subsidy in the context of fiscal imbalance by taking Kerala as a specific case. Specifically, this study aims at the following objectives:

- Sketch the fiscal imbalance of Kerala and relate the role of subsidy there on.
- To estimate explicit budgetary subsidy and power sector subsidy as a part of explicit subsidy.
- To offer a critique of the available estimates of implicit subsidy, and
- To suggest a methodological improvement in arriving at implicit subsidy estimates.

1.9 Choice of Kerala for the Case Study

Kerala was selected as the case to be studied for two reasons. The first is because the State is known for its initiatives in human development primarily through public investments in universal literacy and public health. The State invested in these sectors in the early 1970s and continues to reap the benefits of a well-educated and healthy population. Now the non-plan component i.e. the maintenance expenditure is mounting and the State itself recognised this problem in various reports.[8] Hence it is pertinent to study the effect of State provision of services on its fiscal imbalance. The other obvious reason was the access to data and proximity to State government departments and sources of information.

1.10 Analytical Framework

The first step in the pursuit of the objectives of this study is a preliminary analysis of fiscal imbalance in Kerala. This is done by examining various deficit measures and the State's debt position. Then we argue that the quantum of subsidy has affected fiscal balance. Given the difficult fiscal situation, a major subsidy-receiving sector viz. power is selected and the quantum of subsidy received by Kerala State Electricity Board (KSEB) is examined to illustrate a more complete picture of the explicit subsidy. We also examine finances of the Kerala State Road Transport Corporation (KSRTC) for an idea of liabilities of one of the largest public corporations of Kerala.

Having examined various dimensions of explicit subsidy, we move on to the estimation of implicit subsidy. First, a critique of the methodology followed and estimates arrived at by prominent and oft-cited studies is offered. We then make an attempt to suggest a refinement in the methodology of estimating implicit subsidy.

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[8] The White Paper on State Finances (2001), Report of the Resources Commission (1993).

The suggested method consists of calculating the replacement cost of capital from the historic values given in the budget. The replacement cost capital is weighted by an assumed depreciation rate to give the depreciation component of fixed cost. The sum of variable cost and fixed cost so estimated is regarded as the cost of provision of government service.

1.11 Period of Analysis

Explicit subsidies have been examined from 1993-94 to 2002-03. The Economic and Purpose Classification of Budget was available only for this time period. Implicit subsidy, data for which was taken from Finance Accounts has been calculated for four time points – 1989-90, 1995-96, 1998-99 and 2003-04.

1.12 Chapter Scheme

This introductory chapter attempted a brief review of relevant literature with a view to provide a perspective for estimating government subsidy – explicit and implicit – in the context of poor fiscal performance of the government at Centre and State levels. This chapter also highlighted the significance of the study of subsidy in the context of Kerala. Chapter 2 makes a preliminary analysis of fiscal imbalance in Kerala. Chapter 3 is an empirical examination of explicit subsidy in Kerala. Section 1 of that chapter gives a theoretical background of subsidies and highlights the issues that are often discussed in India. Section 2 focuses on Kerala, where subsidy in the budget is examined. Subsidies received by Kerala State Electricity Board (KSEB) from the government is determined and summed with subsidy in the budget, to arrive at a more complete picture of the explicit subsidy. The finances of Kerala State Road Transport Corporation (KSRTC) are examined for an idea of the Public Sector Borrowing Requirement. Chapter 4 reviews literature on implicit subsidy and explains methodologies adopted by various studies. The chapter highlights the areas of refinement in the methodology to estimate implicit subsidy. A possible refinement of methodology for measurement of implicit subsidy is suggested in Chapter 5. The chapter then estimates implicit subsidy for the special case of Kerala. The new estimates are compared with results from earlier studies. This is followed by a sensitivity analysis to see how estimates change when values of certain parameters are changed. Chapter 6 following this is the concluding one, which summarises the major findings of previous chapters and draws their policy relevance.

1.13 Data Sources

Data for this study has been taken from various government documents and publications. The sources of information are as listed below.

- 'Budget-in-Brief,' Government of Kerala (various issues)
- 'Finance Accounts', Government of Kerala (various issues)
- 'Economic and Purpose Classification of Kerala Government Budget,' Department of Economics and Statistics, Government of Kerala (1993-94 to 2002-03)
- Handbook of Statistics on Indian Economy, Reserve Bank of India (http://www.rbi.org.in/scripts/publications.aspx)
- State Finances: A Study of Budgets, Reserve Bank of India (http://www.rbi.org.in/scripts/publications.aspx)
- 'National Accounts Statistics – Back Series 1950-51 to 1992-93', Central Statistical Organisation, India (2001).
- 'National Accounts Statistics', Central Statistical Organisation, India (various issues).
- Annual Statement of Accounts of KSEB (various issues)
- Annual Accounts and Audit Report of KSRTC (various issues) have been used in the chapter on explicit subsidies.

1.14 Limitations of the Study

The main concern of this study is the estimation of subsidy – explicit and implicit. Subsidy so estimated is presented in the context of fiscal imbalance in Kerala. The study however does not delve into details of subsidy policy particularly regarding pricing, distribution of subsidy or targeting. Nor are questions regarding efficiency and leakage addressed, in the context of streamlining subsidy to correct fiscal imbalance.

CHAPTER 2

FISCAL IMBALANCE IN KERALA: A SNAPSHOT

The objective of this chapter is to examine the nature of fiscal strain on the State government. The chapter begins with an examination of revenue and expenditure performance, and debt situation in the State. One of the drivers of fiscal imbalance is revenue expenditure of which subsidy is a component. Although explicit subsidy appears to be small, the implication of the excluded and hidden components could be a cause for concern in achieving fiscal balance.

Kerala is known for its high achievements in human development. The State's role in this is unprecedented. The State's initiative was in the form of allocation of resources to create social capital, particularly in education and health. This benefited Kerala society but at the same time put a strain on the State's fiscal resources to the extent of affecting its normal functioning[1].

The burden of social sector expenditure on the State's finances was so severe that by the beginning of 1990s funds borrowed for plan purposes were diverted towards non-plan revenue expenditure, creating deficits in the account with Reserve Bank of India (RBI) and restrictions being imposed by RBI on treasury operations in 1991-92. It became necessary to address the imbalance in the finances of the State government. The Government of Kerala constituted the Resources Commission to formulate a package of recommendations to be implemented in the short run, to raise resources for the government and bring down the large non-plan revenue deficit. The Commission presented its report in 1993.

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[1] The White Paper On State Finances, 2001 mentions "(T)he tremendous problem of credibility of Government assertions" from the inability of the Government of Kerala to pay cash on cheques issued or make payments on items already included in the budget document.

Sen and Rao (1993)[10] in a study done for the Resources Commission attributed the resource constraint in the State's finances to the greater reliance on borrowed funds to finance plans and the use of relatively expensive sources of borrowing such as small savings and provident funds. The basic problem was identified as faster growth of revenue expenditure than revenue receipts, as a consequence of which budgetary contribution to plans deteriorated over time. Dissavings and loan repayment obligations caused a major drain on resources of the State. The study analysed the decade 1980-81 to 1988-89 and found that the resource constraint in the State was caused on the one hand by rising revenue expenditure and on the other hand by falling share of the State's own tax revenue in total revenue. The State's own tax revenue increased at 16 per cent per year during the period 1980-81 to 1988-89, the major contributor being sales tax. However, the stagnation in non-tax revenue cancelled out the rising share of own tax revenue in total revenue. Although the State's own tax performance was above average compared to other States during 1980-81 to 1988-89, the study found that the State's tax performance was lower by 40 per cent in case of sales tax and 29 per cent in case of excise duty when compared to its own peak performance in 1971-72.

In 2001 the Government of Kerala constituted a sub-committee to prepare a status paper on the finances of Kerala. The sub-committee prepared the White Paper on State Finances, which was intended to be a statement of facts on the financial health of the State. The White Paper identified two challenges that faced Kerala – slow growth of the economy and the liquidity crisis faced by the government. It was found that in the three decades beginning 1970-71 there was decline in the growth of revenue receipts. The growth rate of revenue receipts was 16.49 per cent in 1970s, which fell to 13.69 per cent in 1980s and further to 12.67 per cent in 1990s. In 1986-1990 and 1996-2000 the growth rate of revenue receipts was only 10 per cent. Own tax revenues contributed 61 per cent of the State's revenue receipts. However the decadal growth rate of own tax revenue fell steadily in the three decades 1970s to 1990s. In the 1970s the growth rate of own tax revenue was 18.01 per cent. This fell to 15.63 per cent in 1980s and further to 14.37 per cent in 1990s. There was steady decline in growth rates of the three major tax contributors – sales tax, State excise, and stamps and registration.

The major component of non-tax revenue of the State comes from forests by way of sale of timber. In the period studied by the White Paper the returns from forests were constrained by environmental regulations imposed by the Central government. In 1998 a committee constituted under the chairmanship of the Chief Secretary to

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[10] Sen, Tapas K. and M. Govinda Rao, "State Finances in Kerala: Selected Issues" for *Resources Commission*, Government of Kerala, 1993.

advice on mobilising non-tax revenues recommended raising fees and user charges in departments like education and health.

2.1 Indicators of Fiscal Imbalance

The fiscal strain on the State government is manifest by persistent revenue deficit, increasing reliance on borrowed money to meet current (revenue) expenditure and rise in public debt. An examination of data on budget position of the State government reveals a persistent revenue deficit from 1982-83 onwards (Appendix: Graph A.2.1) and it has grown exponentially at the rate of 3.9 per cent per year. The share of revenue deficit (RD) in Gross State Domestic Product (GSDP) also increased from that year onwards. While RD was only 0.01 per cent of GSDP in 1982-83, it increased to 1.74 per cent in 1987-88, 2.26 per cent in 1997-98 and in 2003-04 RD reached 2.98 per cent of GSDP (Graph 2.1).

Graph 2.1: Revenue Deficit (Kerala) - Percentage of GSDP and GFD

Years	1980-81	1981-82	1983-84	1984-85	1985-86	1986-87	1988-89	1989-90	1990-91	1991-92	1993-94	1994-95	1995-96	1996-97	1998-99	1999-2000	2000-01	2001-02	2003-04
RD/GFD (%)	15.14	-155.6	19.45	5.88	22.96	34.6	39.79	41.47	52.86	45.35	39.7	36.07	30.92	41.68	67.31	79.84	81.15	79.7	80.59
RD/GSDP (%)	0.543	-1.78	0.79	0.17	0.84	1.53	1.31	1.75	2.56	1.78	1.41	1.25	1.04	1.45	3.61	5.79	4.51	3.60	2.98

Revenue deficit indicates the borrowing requirement for current consumption. The revenue deficit (RD) has also increased as share in Gross Fiscal Deficit (GFD), reflecting the poor quality of borrowing (Graph 2.1). In 1980-81, RD was 15.14 per cent of GFD. It became more than 30 per cent within a gap of six years and steadily rose since then. In 1998-99 revenue deficit was 67.31 per cent of GFD and in 2003-04 close to 81 per cent of GFD was the RD (BE). On the one hand the rising share of RD in GFD indicates that capital expenditure is compromised. On the other hand it also highlights the burden of debt servicing.

Examination of capital expenditure shows that in the beginning of 1980s the share of capital expenditure in total expenditure was relatively high. With exception of a few years, capital expenditure as percentage of total expenditure declined at an exponential rate of (-) 3.96 per cent per year. In 1980-81 capital expenditure was 14.98 per cent of total expenditure (Graph 2.2). By 1987-88 this share fell below 10 per cent and has fallen since then. In 1987-88 capital expenditure which was 8.04 per cent of total expenditure fell to 5.81 per cent in 2000-01. In 2002-03 capital expenditure jumped to 11 per cent of total expenditure, however decreased again to 4.87 per cent in 2003-04.

Graph 2.2: Capital Expenditure as Percentage of Total Expenditure (Kerala)

Capital Exp/Total Exp (%)	1980-81	1981-82	1983-84	1984-85	1985-86	1987-88	1988-89	1989-90	1991-92	1992-93	1993-94	1995-96	1996-97	1997-98	1999-2000	2000-01	2001-02	2003-04
	14.98	14.09	12.79	12.44	11.31	8.04	9.18	8.31	7.06	7.8	8.09	8.4	8.23	6.6	6.66	5.81	6.04	4.87

Years
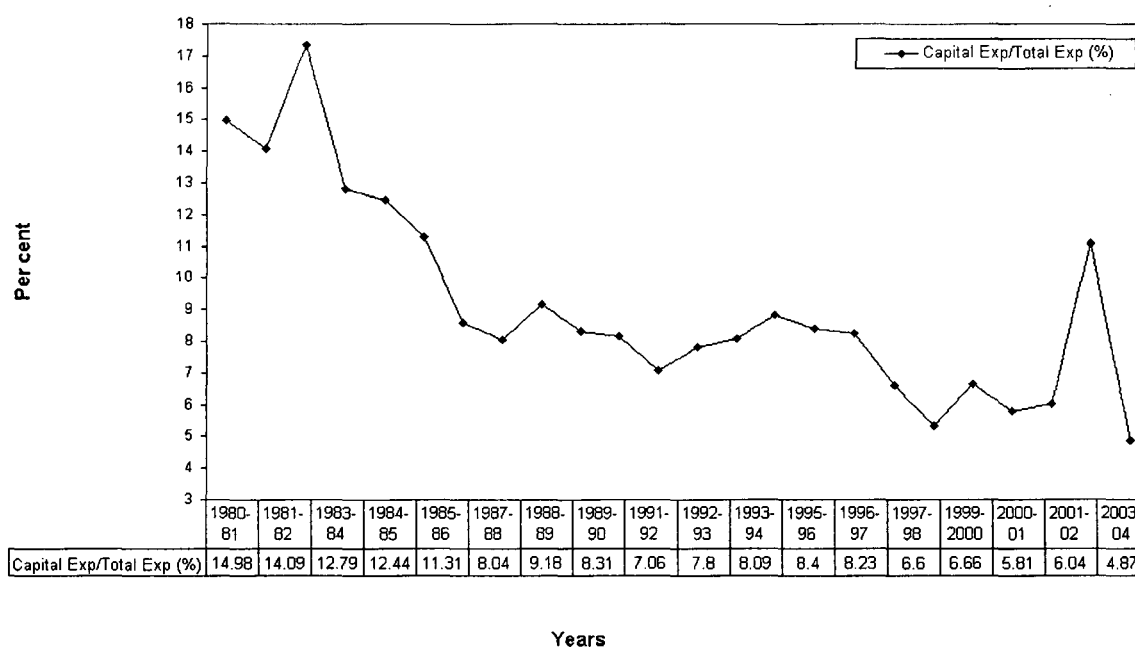
"A Study of Debt Sustainability at State level in India" (Rajaraman, 2005), also called the RBI study, analysed debt trajectory of States in India and suggested different types of corrective actions depending upon the sustainability status of debt. The study examined various indicators of debt for the decade 1992-2002 and compared quinquennial averages for 1992-97 and 1997-2002, corresponding to Eighth and Ninth five year plans respectively. According to the RBI study, indicators of imbalance - Gross Fiscal Deficit (GFD), Revenue Deficit (RD) and stock of debt[11] as percentage of GSDP increased for the periods considered (Table 2.1). Although these ratios are not as

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[11] Public debt includes internal debt, loans and advances from Centre, and debt on Public Account, which includes provident funds, reserve funds and deposits.

high as for some of the other States[12], they nevertheless give a warning signal when growth rates are considered.

Table 2.1: Deficits and Debt of Kerala as a percentage of GSDP

Period	RD	GFD	Debt
1992-97 (Average)	1.3	3.4	28.0
1997-02 (Average)	3.9	5.5	34.0

Note: RD = Revenue Deficit, GFD = Gross Fiscal Deficit

Source: Extracted from Reserve Bank of India (2005), page 18, Table 4.1

The study found that for 1992-97 when GSDP grew at 16.8 per cent public debt grew at 17.6 per cent. This gap widened in 1997-2002 when GSDP grew at 11.4 per cent, much lower than the growth in debt at 18.7 per cent (Table 2.2). Debt growing at a faster rate than GSDP raises the question of its stability. The time path of debt/GSDP is an important indicator of the sustainability status of State debt (Rajaraman, 2005), where sustainability relates to the ability of the government to service its debt. Debt/GSDP must stabilise at some level for the debt path to be sustainable. When this occurs debt and GSDP grow at the same rate so that over time the debt carrying capacity of the economy is maintained. (For an explanation on debt stabilisation condition refer Note 1)

Table 2.2: Growth Rates of GSDP, Revenue Receipts and Outstanding Debt of Kerala

Period	GSDP	RR	Debt
1992-97 (Average)	16.8	16.6	17.6
1997-02 (Average)	11.4	8.2	18.7

Note: GSDP = Gross State Domestic Product, RR = Revenue Receipts

Source: Extracted from Reserve Bank of India (2005), page 19, Table 4.2

According to the RBI study, in 1992-97 the nominal growth rate (n) for Kerala at 16.8 per cent was greater than the average interest rate on debt stock (i) at 10.4 per cent, requiring primary deficit to stabilise debt/GSDP. Similarly in 1997-2002 although 'n>i' the gap was much reduced (Table 2.3). Calculations using data from State

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[12] Bihar (47.3per cent), Orissa (53.7per cent), Punjab (41.5per cent) and Rajasthan (37.7per cent) have higher Debt-GSDP ratios than Kerala for 1997-2002, and also for the previous period 1992-97. Some Special Category States like Mizoram (78.2per cent in 1997-02), Sikkim (71.3per cent),

Finances: Study of Budgets – 2005-06, RBI, show that in 2003-04 the interest rate on public debt was 11.67 per cent and the growth rate of GSDP over the previous year was 10.25 per cent. 'n' being less than 'i' this requires the primary balance to be in surplus for debt/GSDP to stabilise. However the primary balance has been in deficit for several years and in 2003-04 (RE) the primary deficit was Rs. 2210 crore and grew by 8.2 per cent over the previous year (Appendix: Table A.2.1). Thus debt situation has been moving towards instability and in 2003 the stability condition has been violated[13].

Table 2.3: Average Interest Cost and GSDP Growth (Kerala)

Period	Average Interest Rate (i)*	Average GSDP growth rate (n)	'n and i' relation	Condition for debt stabilisation
1992-97	10.4	16.8	n > i	Primary Deficit
1997-02	10.3	11.4	n > i	Primary Deficit
2003-04 #	11.67	10.25	n < i	Primary Surplus

* Interest rate is worked out as interest payment for the current year divided by the closing stock of outstanding liabilities of previous year.

\# Own estimates from State Finances: Study of Budgets – 2005-06, Reserve Bank of India.

Source: Extracted from Reserve Bank of India (2005), page 25, Table 4.5

To understand the source of the unstable debt position, we disaggregate the Gross Fiscal Deficit (GFD) into its components.

Gross Fiscal Deficit = Revenue Deficit + Capital Outlay + Net Lending

The Table 2.4 gives the decomposition of GFD into revenue deficit, capital outlay and net lending for the period from 1999-2000 to 2004-05 (RE), i.e. the period in which debt/GSDP seems to have become unstable. Clearly, the growth in GFD of 3.16 per cent is due to the growth in revenue deficit (4.72 per cent). While capital outlay shows slight negative growth ((-) 0.89 per cent), growth in net lending is (-) 15.47 per cent. Net lending, which constitutes budgetary allocations for loans and advances to State enterprises, departmental undertakings and co-operatives has been the net loser. Thus revenue deficit whose major components are salaries, wages, pensions and interest payments are the cause of the unstable debt position.

Arunachal Pradesh (60.4per cent) show alarming values of Debt-GSDP ratio for the same periods.

[13] Sustainability must be studied in an inter-temporal framework. Violation of sustainability condition in one period does not necessarily imply that debt has become unsustainable, it could be a temporary phenomenon.

Table 2.4: Decomposition of Gross Fiscal Deficit (GFD) for Kerala

(Rs. crores)

Years	GFD	RD	Capital Outlay	Net Lending
1999-2000	4537	3624	648	264
2000-01	3878	3147	577	154
2001-02	3269	2606	558	105
2002-03	4994	4122	699	173
2003-04	5539	3680	640	1219
2004-05 (RE)	5299	4565	620	114
CAGR (per cent)*	3.16	4.72	-0.89	-15.47

Source: State Finances – Study of State Budgets, Reserve Bank of India (Various Issues)

* Own estimates

2.2 Components of Revenue Deficit

The revenue deficit can be decomposed further to see the changes in its constituent variables.

Revenue Deficit = Revenue Expenditure – Revenue Receipts

= (Developmental and Non-Developmental Revenue Expenditure)[14] –

(Tax Receipts + Non-tax Receipts + Transfers from Centre)

Graph 2.3: Composition of Total Revenue - Kerala

	1981-82	1982-83	1983-84	1985-86	1986-87	1987-88	1988-89	1989-90	1991-92	1992-93	1993-94	1994-95	1995-96	1997-98	1998-99	1999-2000	2000-01	2001-02	2003-04	2004-05
Own taxes	44	54.1	52.1	54.35	54.17	58.33	56.16	60.19	58.69	56.86	59.79	59.98	62.37	63.18	64.57	65.38	67.24	65.41	68.46	66.39
Non-taxes	35.92	22.95	25.48	30.14	23.26	23.42	20.81	17.54	21.1	22.44	21.06	22.05	18.51	18.97	16.23	15.3	14.6	16.77	14.51	15.79
Central Transfers	20.08	22.95	22.42	15.51	22.57	18.24	23.03	22.26	20.21	20.7	19.15	17.97	19.12	17.85	19.2	19.33	18.16	17.82	17.03	17.81

Years

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[14] Budgetary classification of expenditure (revenue and capital accounts) is into plan and non-plan expenditure or developmental and non-developmental expenditure.

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The Graph 2.3 shows the composition of the State's total revenue from 1981-82. Own taxes contributed 44 per cent to total revenue of the State in 1981-82. This performance improved over time and in the years after 1999-2000 own taxes contributed more than 65.38 per cent of total revenue. During the same period however, the contribution of non-tax revenue has steadily fallen. In 1981-82 non-tax revenue was 35.92 per cent of total revenue. The share of non-tax revenue steadily decreased to 23.98 per cent in 1990-91 and further to 14.60 per cent in 2000-01. Thus the better performance in the State's own tax revenues has been offset by poor performance in the State's non-tax revenues. For the period from 1981-82 transfers from the Centre was around 20 per cent, which reduced to 18 per cent after 2000-01.

We examine the expenditure side in terms of developmental and non-developmental components. The Graph 2.4 indicates the share of developmental expenditure and major components of non-developmental expenditure in revenue expenditure. The share of developmental expenditure has slowly decreased from 1981-82 onwards. In 1981-82 developmental expenditure was 73.21 per cent of revenue expenditure. This share fell to 63.81 per cent in 1990-91 and further to 53.81 per cent in 2000-01. At the same time debt services i.e. interest payments, and administrative expenditure, which are major components of non-developmental expenditure have increased. In 1981-82 debt services constituted 7.56 per cent of revenue expenditure. In 1990-91 debt services increased to 12.06 per cent and further to 19.01 per cent in 2000-01. In 2004-05 debt services constituted 21.04 per cent of total revenue expenditure. Expenditure on administration, which was 8 per cent of revenue expenditure in 1981-82, increased in the 1980s and 1990s, but by 2000-01 fell to 7.71 per cent.

Graph 2.4: Composition of Revenue Expenditure - Kerala

	1981-82	1982-83	1984-85	1985-86	1986-87	1987-88	1989-90	1990-91	1991-92	1992-93	1994-95	1995-96	1996-97	1997-98	1999-2000	2000-01	2001-02	2002-03	2004-05
Revenue Exp	754.5	783.4	1139	1445	1655	1781	2298	2825	3216	3656	5066	5826	6788	8241	11566	11878	11662	14756	17169
Developmental Exp	552.4	560.5	794.6	1036	1115	1163	1460	1803	1969	2281	3015	3412	4048	5031	6510	6396	6028	8064	9244
Debt Services	57.04	61.42	121.04	127.19	177.23	213.15	293.01	340.69	483.43	542.57	819.73	924.06	1103.7	1286.4	1952.3	2257.9	2489.8	2946.7	3612.4
Administration	60.21	70.82	103.39	122.56	132.05	159.01	225.21	258.20	290.77	303.09	417.97	495.82	562.06	636.21	848.94	920.54	942.29	1081.6	1289.4

Years

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2.3 Variables affecting Fiscal Balance

The single most important component of revenue expenditure is accounted by Salaries & Wages. Salaries & Wages includes remuneration to general government employees and wages to casual labourers, in the provision of government services. Salaries & Wages, Pension and Interest form 70 per cent of revenue expenditure in 2003-04 (Table 2.5). These being committed expenditures on the government account, there is no flexibility in adjusting them downwards. Salaries & Wages is the single largest head under revenue expenditure despite their share having fallen from 43 per cent in 1991-92 to 33 per cent in 2003-04.

Table 2.5: Main components of Revenue Expenditure, their share in Revenue Expenditure and Revenue Deficit

(Rs. crore)

Years	Interest *	Pension *	Salaries & Wages*	Subsidies @	Total #
1991-92	483.42	338.96	1383.59	NA	2205.97
1992-93	542.51	371.87	1419.46	NA	2333.84
1993-94	687.16	464.72	1836.13	87.99	3076.00
1994-95	819.67	565.45	2194.25	106.72	3686.09
1995-96	924.16	716.85	2230.40	122.81	3994.22
1996-97	1103.41	753.67	2616.66	180.37	4654.11
1997-98	1286.09	913.02	2803.26	185.33	5187.70
1998-99	1446.26	1154.32	3254.68	228.60	6083.86
1999-2000	1952.27	1808.29	4502.86	285.21	8548.63
2000-01	2257.60	1929.48	4491.61	174.83	8853.52
2001-02	2489.47	1837.93	4200.82	182.91	8711.13
2002-03	2946.77	2282.90	4678.99	152.10	10060.76
2003-04	3328.30	2408.83	5067.09	NA	10804.22

Source: * Budget-in-Brief, Government of Kerala (various issues)

@ Economic and Purpose Classification of Kerala Government Budget (various issues)

Total = Interest + Pension + Salaries and Wages + Subsidies

NA = Not Available (The Economic and Purpose Classification was available only for the period 1993-94 to 2002-03)

Another inflexible item of expenditure, meaning thereby difficult to adjust downwards, is subsidy. Subsidy has the potential to add to fiscal imbalance although its quantum is relatively small within the broad head of revenue expenditure. In 1999-2000 subsidies given by the State government peaked at Rs. 285 crore (Table 2.5), forming 3.33 per cent of revenue expenditure. In 2002-03 this came down to Rs. 152 crore, which was 1.51 per cent of revenue expenditure. The Economic classification of budget includes under subsidies, grants made to public corporations as compensation for losses arising as a result of government policy (Refer Note 2). Assistance to the public corporations to cover operating losses is therefore not included in subsidy. To illustrate, losses arising from free distribution of power to farmers will be covered by 'subsidy' but deficit in the electricity department's accounts will be covered by 'assistance.' Several other transfers in the revenue account of public enterprises are overlooked when calculating subsidies, but these are part of the Public Sector Borrowing Requirement (PSBR)[15].

Planning Commission (2002) in its Annual Report on the Working of State Electricity Boards and Electricity Departments noted that the gross subsidy[16] on energy sales, which was Rs. 7,449 crores in 1991-92, was set to increase to Rs. 43,060.10 crores in 2001-02 (Annual Plan Proposal (AP)). The State governments were likely to make a subvention of Rs. 8,339.62 crore to the power sector in 2001-02 (AP). Despite subsidy provision, commercial loss[17] of SEBs taken together was Rs. 3,083 crores in 1990-91 and it increased to Rs. 25,259 crores in 2000-01.

The Table 2.6 shows the commercial losses of Kerala State Electricity Board (KSEB) with and without subsidy according to the Planning Commission report. Subsidy can be calculated as the difference between these two variables. No subsidy was given in 1992-93, but it increased to Rs. 909 crores in 2001-02. However total subsidy in the budget of Kerala government in 2001-02 was only Rs. 182.91 crores (Table 2.5). Thus there is some discrepancy in the definition or calculation of subsidy in the government's accounts. If the subsidy to KSEB is added to the subsidy in the budget total subsidy would increase to Rs. 1091 crores. Consequently subsidy would be of greater magnitude than is accounted in the State budget.

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[15] The PSBR represents the excess of expenditure over revenue for all government entities. It is also called the "consolidated public sector deficit." Ideally the public sector should include the central government, State and municipal governments, decentralised agencies and State owned enterprises. PSBR includes deficits of various levels of government and also of public corporations.

[16] Gross subsidy is the sum of subsidy to domestic consumers, agricultural consumers and on inter-State sales.

[17] Commercial loss is defined as the gap between total revenue and total expenditure in a given year.

Table 2.6: Commercial Losses of KSEB

(Rs. crore)

Years	Commercial loss of KSEB *		Subsidy
	With subsidy	Without subsidy	
(1)	(2)	(3)	(3 – 2)
1992-93	65	65	0
1993-94	75	75	0
1994-95	120	129	9
1995-96	130	183	53
1996-97	176	208	32
1997-98	199	199	0
1998-99	205	411	206
1999-2000 (P)	181	646	465
2000-01 (RE)	348	1129	781
2001-02 (AP)	445	1354	909

(P) = Provisional
* Source: Planning Commission (2002)

The above discussion was confined to what is generally called explicit subsidy. The subsidy defined above however excludes from its scope the flow of resources from the government in the provision of services. Provision of public goods and services such as administration, law and order, security and public amenities is the responsibility of the government. These must be financed out of tax revenues. However there are several other services also provided by the government, which are of the nature of merit goods and private goods, and are not self-financing. Though theoretically these services can be financed out of revenues they generate (in the form of user fees, levies etc.), they are often provided practically free of cost. To a large extent, expenditure on these services should be treated as implicit subsidy and should be accounted in total subsidy of the government. The reason as to why they are given free of cost is based on a particular provision in the Indian Constitution. The Indian Constitution, in the Directive Principles of State Policy lays down certain guidelines for the State to achieve its allocation, distribution and stabilisation functions and these Directives are asserted to be fundamental in the governance of the country.

Following these Directives the State allocates resources for various services under the budget head of Social Services and Economic Services. There are large externalities associated with these services. It becomes necessary for the government to make them available below cost of provision, not only to induce greater consumption but also to make them accessible to individuals. Expenditure on these services is a flow of resources in kind rather than monetary transfers, to consuming individuals. Thus the

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value of services that flow from the government is a form of subsidy better called consumption subsidy, where individuals receive the benefit of services, but do not make commensurate payments for them.

The Report of the Resources Commission (GoK, 1993) observes that "There is an inherent bias towards larger revenue expenditure due to the emphasis on social services and welfare measures, without corresponding growth in the productive sectors." Commenting on the revenues from these services, the Reports says "considering the enormous investments made by the State government in social and economic infrastructure, the low and declining share of non-tax revenues poses a severe constraint on further investment in these activities." Further, "the uneconomic pricing of social and economic services provided directly by the government and through public enterprises resulting in a low and declining proportion of non-tax revenues in own total revenues points towards existence of a large volume of hidden subsidies." (Page 203)

Some studies have estimated hidden subsidy (also called implicit subsidy) for Kerala. Mundle and Rao (1991) studied implicit subsidy for the Centre and States. They estimated the total implicit subsidy for Kerala to be Rs. 1,161.10 crore in 1987-88. Srivastava and Sen (1997) estimated total subsidy net of surpluses, for Kerala as Rs. 2,960.74 crore in 1993-94. Srivastava and Rao (2003) estimated total subsidy to be Rs. 6,291 crore in 1998-99. Thus in 1998-99 subsidy was estimated to be 68.17 per cent of revenue expenditure and 87.36 per cent of revenue receipts of the State. These estimates indicate that the magnitude of implicit subsidy is large.

In a nutshell, a comprehensive measure of subsidy should include in addition to what is defined in the budget, any assistance or transfers to public corporations or entities that lower their cost of production or cover their losses. This would imply subsidy for production purposes. Subsidy should also include transfers that go towards inducing consumption through the provision of government services. Such an estimate of subsidy may be large enough to contribute to fiscal imbalance like other variables such as salaries, wages, pension and interest.

2.4 Chapter Summary

We now summarise the main thread of arguments in this chapter. The poor state of finances in Kerala is well documented. Various government reports identified a resources constraint in the State's finances in the early 1990s and attributed it to greater reliance on borrowed funds to finance plans and recourse to relatively expensive sources of borrowing to finance plan expenditure. Consequently, there was

faster growth of revenue expenditure than revenue receipts leading to fiscal imbalance.

The fiscal imbalance in Kerala is led by revenue deficit, constituting 81 per cent of Gross Fiscal Deficit. The poor quality of borrowing requirement is reflected by the high proportion of revenue deficit, which arises out of the government's need to finance its consumption expenditure. The rise in revenue expenditure has been at the cost of capital expenditure. The high proportion of revenue deficit also feeds into the unsustainable nature of government debt.

The State's revenue and expenditure performance leaves much to be desired. On the revenue side own taxes have contributed increasingly to the State's total revenue. Declining share of non-tax revenue in total revenue however has offset the good performance of own taxes. On the expenditure side non-developmental and committed expenditure, due to their downward inflexibility have contributed to the overall deficit situation. Salaries, wages, pension and interest contribute 70 per cent of revenue expenditure. In addition to these, subsidies may form another source of drain on the State's resources.

The magnitude of subsidy accounted in the government is negligible. This may be attributed to the incomplete definition of subsidy in the budget. The subsidy as defined in the budget is only the subsidy given to government administrative departments. Resource transfers in the form of subsidy or assistance to non-departmental undertakings are thus excluded from the definition of subsidy in the budget. The Planning Commission report on the working of State Electricity Boards showed that the amount of subsidy received by SEBs from State governments is significant. Thus exclusion of public enterprises and non-departmental undertakings in measuring subsidy could lead to gross underestimation. Besides, there is the uncovered cost of government services referred to as implicit or hidden subsidy in literature. Studies in the past estimated implicit subsidies to be significant in magnitude. A wider definition of subsidy than what is normally defined as subsidy in the budget may imply that the contribution of subsidy on fiscal imbalance of the state is greater than what is commonly perceived.

Appendix to Chapter 2

Table A.2.1 Primary Deficit – Kerala

Years	*Amount (Rs. crore)	# Growth rate over previous period
1995-96	378.50	-
1996-97	439.07	16.00
1997-98	1127.76	156.85
1998-99	1565.94	38.85
1999-2000	2582.29	64.90
2000-01	1620.20	-37.26
2001-02	779.93	-51.86
2002-03	2043.20	161.97
2003-04	2210.75	8.20

Source: *Extracted from, Government of Kerala (2005), Economic Review – 2004, page 8, Table 2.2

Own estimates

Graph A.2.1: Trend of Revenue Deficit - Kerala * (Rs. Crore)

Revenue Deficit	1974-75	1976-77	1977-78	1979-80	1980-81	1982-83	1983-84	1985-86	1986-87	1988-89	1989-90	1991-92	1992-93	1994-95	1995-96	1997-98	1998-99	2000-01	2001-02	2003-04(B
	-0.31	5.73	-29.05	-57.93	27.22	0.63	58.20	74.16	152.24	163.94	250.45	364.33	337.41	399.88	402.82	1116.8	2027.4	3147.0	2605.6	2665.0

Years
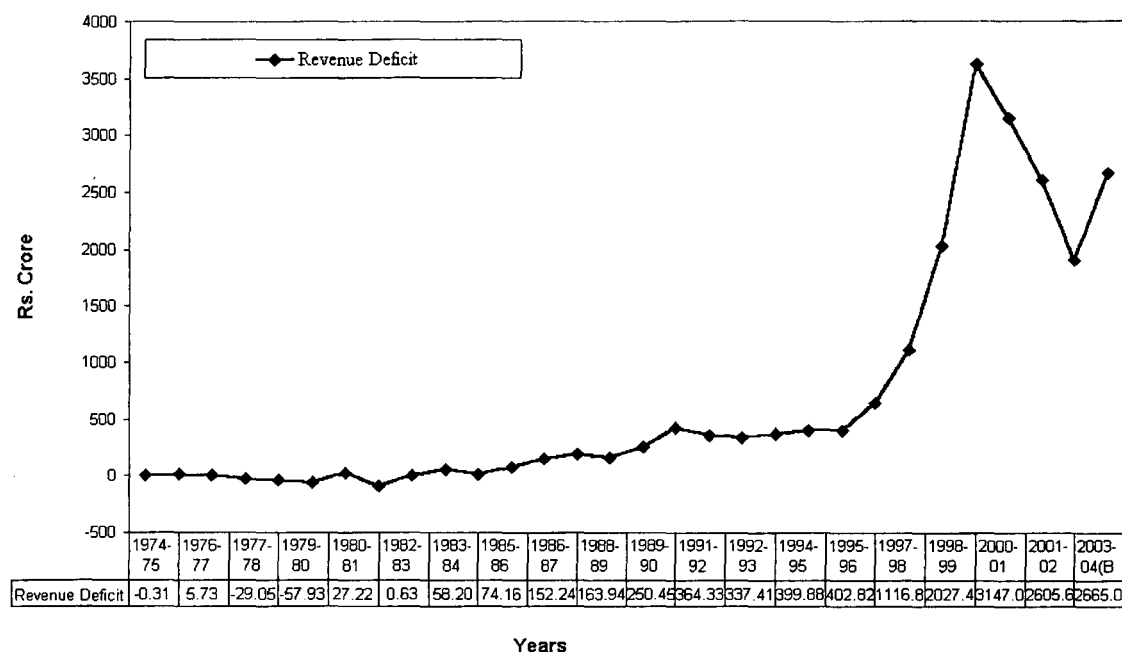
*Revenue Deficit is defined as Revenue Expenditure minus Revenue Receipts.
Source: Reserve Bank of India, Handbook of Statistics on Indian Economy, RBI

CHAPTER 3

EXPLICIT SUBSIDY IN KERALA: AN EXAMINATION OF BUDGET

This chapter deals with explicit subsidies. Section I begins with a theoretical discussion and highlights some prominent issues in Indian literature. The focus then shifts to Kerala in section II, and we analyse the budgetary subsidies as well as the losses of public enterprises from their respective books of accounts, particularly that of KSEB, to arrive at a measure of total explicit subsidy.

SECTION I

3.I.1 Theoretical Discussion

A subsidy consists of actual or imputed flow of money. The actual flow of money is the one that is usually recognised as subsidy. All the pure subsidies (consumption, production and special purpose) come under this. The two forms of imputed subsidy are loan guarantees and tax reduction. Under a loan guarantee the government assures the creditor that the loan will be serviced and repaid, if necessary, by the government itself. The stimulus of the subsidy is to industries supported by the borrowing. Imputed subsidy in the form of tax reduction allows the household or the firm to reduce to some extent its tax liability. It resembles a tax exemption or a restricted definition of a tax base. The revenue loss arising out of this must be made up by heavier taxation elsewhere (Shoup, 1969).

The definition of subsidy adopted by national (and sub-national) governments is the one provided by the UN System of National Accounts (SNA). This definition covers only current transfers made by governments to producers, which may be in the form of direct payments or differentials between buying and selling prices of government trading organisations. This definition has been accepted by the Government of India and State governments, by adopting the SNA (for definition of

subsidy in budget, refer Note 2). A shortcoming of such a definition is the distinction between subsidy and transfers, where subsidy goes to producers, while transfers refer to income transfers going to consumers, which have similar effect as subsidy. Another serious limitation is the artificial distinction between payments on current and capital accounts. For instance, annual payments to public corporations to cover losses would be termed as subsidy, but debt write-off would be termed as capital transfer even though the capital (either entirely or partially) is created in the government sector (Prest, 1974). Thus the definition of subsidy must be broad enough to include any net benefit that accrues to any individual as a result of taxing and spending activities of the government[18]. In this context, government provision of public goods and social goods can be thought of as the limiting case of subsidy. A commodity that has zero subsidy is entirely provided by the private sector; it is subsidised to a large extent if the government makes cash payments to producers; and it is 100 per cent subsidised if the government provides it free of charge to consumers[19].

3.I.2 Subsidies: Issues Discussed in India

Studies on subsidies in the Indian context place the focus on a wide range of issues. The discussion is generally in the context of explicit subsidies, especially for food and fertiliser.

Asha (1986), Mundle and Rao (1991), Tiwari (1996), Srivastava and Sen (1997) studied the volume and composition of budgetary subsidies in India. They made a distinction between explicit subsidy and hidden subsidy. Aggregate subsidy for Centre and States was found to constitute 14.35 per cent of GDP in 1994-95 and the subsidy burden of the States was double that of the Centre (Srivastava and Sen, 1997). Among the explicit subsidies given by the Centre, food, fertiliser and export promotion subsidies were the most important in magnitude (Asha, 1986).

The chief means of food subsidy to consumers is the Public Distribution System (PDS). It is a system of implicit targeting involving a mechanism of self-selection of the poor. This leads to wastage in the sense that non-targeted population also receive part of the subsidy, which could be avoided by direct targeting. This problem could be partly solved by maximising allocations to those left out and by diverting resources towards well-targeted goods (Jha, 1992). Parikh and Suryanarayana (1992), and Suryanarayana (1995) studied the impact of withdrawal of major subsidies in a general

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[18] Musgrave, P.B., Joint Economic Committee, *The Economics of Federal Subsidy Programmes*, Part 2, June 1972, cited in Prest, 1974.

[19] Musgrave, R.A. and P.B. Musgrave, *Public Finance in Theory and Practice*, McGraw-Hill, New York, 1973

equilibrium framework. They found that withdrawal of (PDS and fertiliser) subsidy increases growth, but the rural poor will remain worse off unless they are compensated with an appropriate policy.

Kerosene and Liquefied Petroleum Gas (LPG) are two major fuels subsidised by the government. Subsidies to these fuels are universal and not targeted. Subsidised kerosene is sold through the Public Distribution System (PDS) and LPG is sold by dealers of State-owned oil companies. In 2003-04 the petroleum subsidy was Rs. 6,292 crore[20], which accounted for 1.74 per cent of Central government revenue expenditure and 0.25 per cent of GDP. Gangopadhyay (2004) analyses the usage of subsidised fuels by a nationally representative sample of 100,000 households in both urban and rural sector. In spite of subsidies there has been no shift in fuel consumption pattern away from biomass in rural areas. Subsidies for modern fossil fuels are biased towards the urban sector and are regressive; i.e. greater amounts of subsidised fuels are used by higher expenditure groups, both in rural and urban areas. LPG subsidy mainly goes to the urban sector and on a per capita basis this sector also receives larger kerosene subsidy. Kerosene is used for cooking in urban sector with higher expenditure groups shifting out of kerosene to other fuels like LPG. In the rural sector higher expenditure groups receive more subsidised kerosene, which is used for lighting. Thus the fuel subsidy mechanism is badly targeted and is regressive in character.

The fertiliser industry has received significant government support because of its critical role in achieving food security for the nation. To encourage higher consumption of fertilisers and domestic capacity creation the Government of India introduced the Retention Price-cum-Subsidy Scheme (RPS) in 1977. Under RPS individual manufacturing units were given subsidy to the extent of difference between the sale price and retention price. In addition to the retention price subsidy, equated freight subsidy is paid to manufacturers of controlled fertilisers to cover the cost of transportation from production points to consumption centres. Subsidy is also paid on imported fertilisers to the extent of difference between the cost of imports and the statutorily fixed consumer price (selling price). Government has also been giving a special concession on decontrolled fertilisers (including potassium (K) and phosphate (P) fertilisers) in order to promote balanced use of plant nutrients.

After decontrol of phosphatic and potassic (P&K) fertilisers in 1992, the prices of these fertilisers registered a sharp increase vis-à-vis the price of urea. In order to cushion the impact of increase in prices of P&K fertilisers, the Ministry of Agriculture introduced a scheme of concession on sale of decontrolled fertilisers. Many initiatives

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[20] Source: Expenditure Budget, Vol. I, Government of India (2005-06).

were introduced such as increasing the scale and coverage of special concession and introduction of the uniform indicative maximum retail price (MRP). The statutorily notified sale price and indicative MRP are generally less than the cost of production of the respective manufacturing unit. The difference between cost of production and selling price/MRP is paid as subsidy/ concession to manufacturers.

The financial support by way of subsidy and concession to the fertiliser industry is very large. In 2003-04 total fertiliser subsidy amounted to Rs. 11,847 crore. Of this concession to P&K fertilisers was Rs. 3,326 crore and the subsidy to urea was Rs. 8,521 crore. There has been a steady increase in fertiliser subsidy because of increased production/consumption and increase in the cost of inputs of indigenous fertilisers. The selling price of fertilisers to farmers has however not increased substantially so that there has not been any decline in the annual subsidy bill. However due to sharp fall in price of imported urea and reduced levels of imports, there has been a decline in subsidy for imported urea. The support schemes for decontrolled P&K fertilisers have resulted in steadily increasing bill on concessions (Venkateshwarlu, S and Anindya Sen, 2002; Government of India, 2005).

3.I.3 Trend in Central Subsidies

The major subsidies given by the Central government are food, fertiliser[21], and in recent years for petroleum. The total subsidies of the Central government in 2003-04 were Rs.44,256 crores (Graph 3.1). Over a period of 18 years total subsidies (at current prices) have grown exponentially at the rate of 11.77 per cent per year. In 2003-04 food and fertiliser subsidy alone constituted 83.62 per cent of the total subsidy bill. After the decontrol of fertilisers industry in 1992-93, the Central government's subsidy bill has been entirely driven by food subsidy. Petroleum subsidy was given only in the last two years. In 2002-03, Rs. 5,225 crores and in 2003-04, Rs. 6,292 crores were given as petroleum subsidy.

There was a linear decline in Central subsidies as percentage of GDP from 2.38 per cent in 1990-91 to 1.18 per cent in 1995-96. From 1995-96 to 2003-04, the percentage of Central subsidies in GDP has again increased. In 2003-04 Central subsidies were 1.76 per cent of GDP (Graph 3.2). The decline in the percentage of Central subsidies to GDP between 1990 and 1995 can be attributed to the differential growth rates. During the period 1990-91 to 1995-96 total subsidy saw a negative growth of (-) 1.14 per cent, at

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[21] Fertiliser subsidy is the sum of subsidies for indigenous (urea) fertilizers, imported (urea) fertilizers and sale of decontrolled fertilizers. From 1986-87 to 1992-93 fertiliser subsidy also includes subsidy to small and marginal farmers, and subsidy for export promotion and market development.

the same time the GDP grew at an exponential rate of 15.62 per cent. This resulted in a drastic fall in the percentage share of total subsidy in GDP. After 1995-96 and upto 2002-03 subsidy grew at an exponential rate of 17.14 per cent, while the GDP grew at a rate of 11.06 per cent. This resulted in the increasing percentage of Central subsidies in GDP.

Graph 3.1: Composition of Central Subsidies

	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04
Total subsidies	5451	5980	7732	10474	12158	12253	11995	11605	11854	12666	15499	18540	23593	24487	26842	31210	43533	44256
Food	2000	2000	2200	2476	2450	2850	2800	5537	5100	5377	6066	7900	9100	9434	12060	17499	24176	25160
Interest subsidies	229	393	406	881	379	316	113	113	76	34	1222	78	1434	1371	111	210	750	194
Fertiliser subsidy	2683	3126	4587	6556	7131	6943	6614	4562	5769	6735	7578	9918	11596	13244	13811	12595	11015	11847

Years

Graph 3.2: Central Subsidies Percentage of GDP

	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04
% of GDP	1.96	1.89	2.04	2.39	2.38	2.08	1.78	1.49	1.29	1.18	1.25	1.33	1.48	1.39	1.41	1.50	1.93	1.76

Years

31
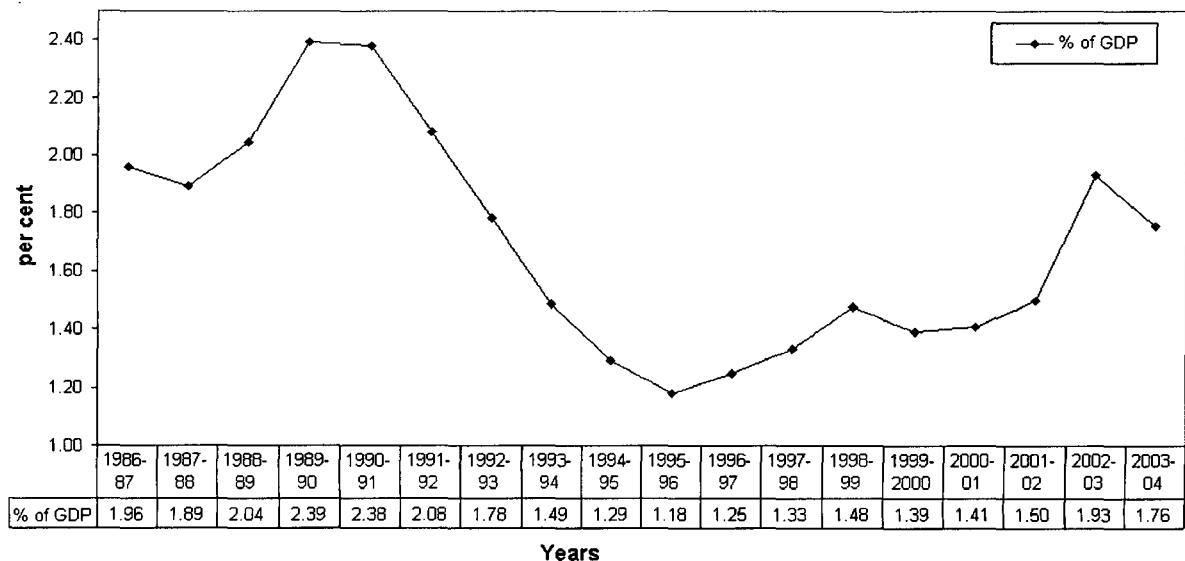
Central subsidies as percentage of revenue expenditure of the Central government have also fallen after 1990-91 (Graph 3.3). In 1990-91 total subsidy of the Central government was 16.54 per cent of revenue expenditure. There was a linear decline upto 1995-96, after which percentage of Central subsidies in revenue expenditure has again risen. In 2003-04 Central subsidies were 12.22 per cent of revenue expenditure. The fall in Central subsidies as percentage of revenue deficit has been the most significant (Graph 3.4). In 1989-90 Central subsidies were 87.91 per cent of revenue deficit. This reached a low of 35.47 per cent in 1993-94. In 2003-04 Central subsidies were 45.04 per cent of revenue deficit.

Graph 3.3: Central Subsidies Percentage of Revenue Expenditure

	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04
Total Subsidy	13.34	12.95	14.29	16.31	16.54	14.89	12.94	10.73	9.71	9.06	9.75	10.28	10.90	9.83	9.66	10.35	12.85	12.22

Years
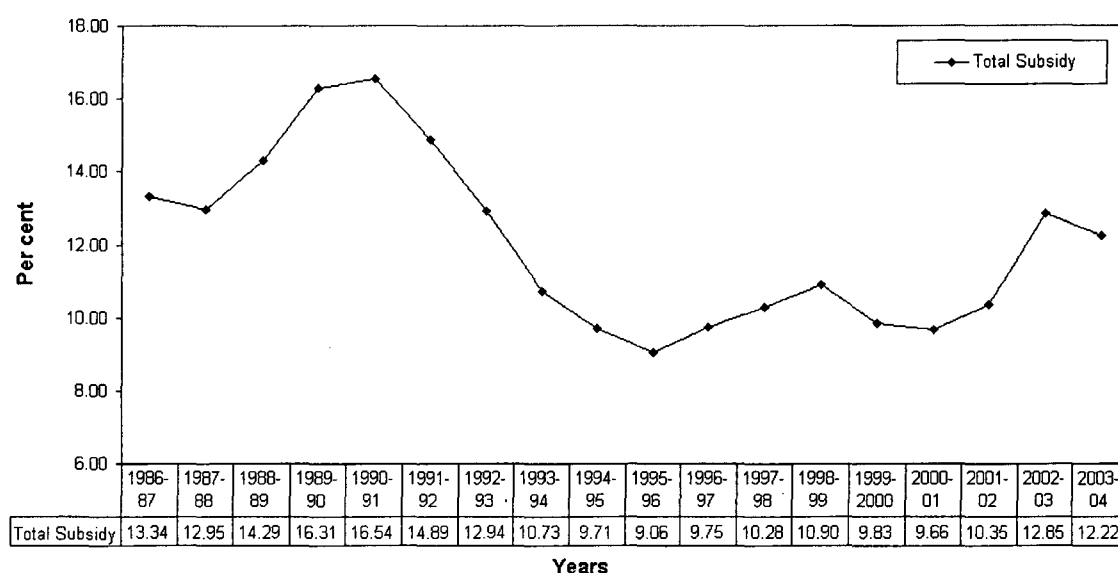
Graph 3.4: Central Subsidies Percentage of Revenue Deficit

	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-01	2001-02	2002-03	2003-04
Total Subsidies	70.09	65.45	73.53	87.91	65.50	75.35	64.58	35.47	38.20	42.60	47.46	39.91	35.23	36.23	31.49	31.16	40.35	45.04

Years
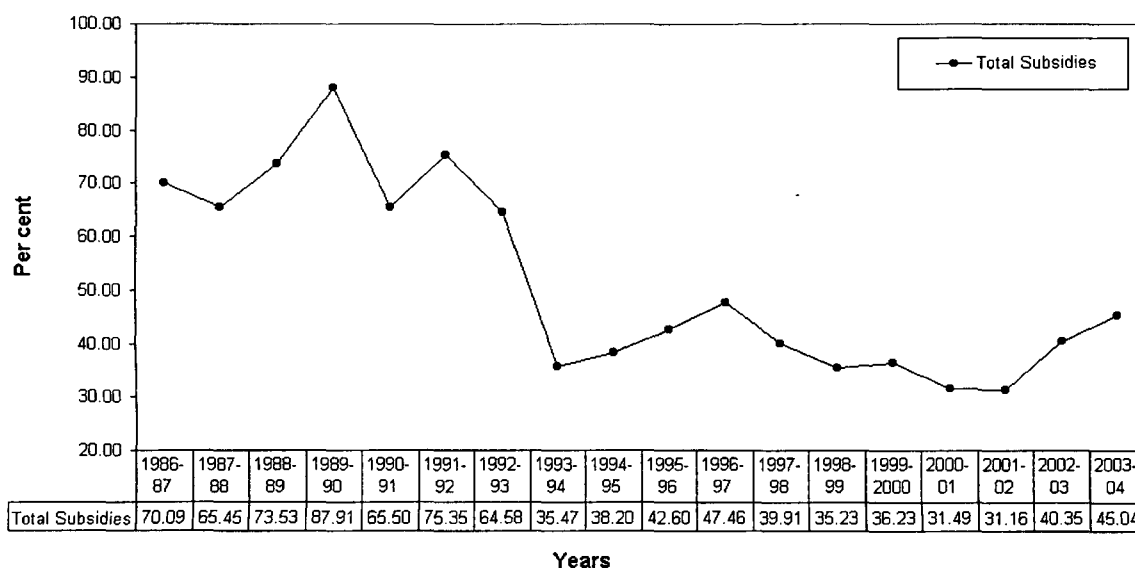
3.II.1 Measure of Explicit Subsidy in Kerala

The Finance Accounts of the Government of Kerala present the revenue and expenditure statements of the government. The finances of the government are classified into revenue and capital accounts, each are further classified into receipt heads and expenditure heads. Various sources of revenue are grouped under the receipt head, and the expenditure head is grouped on the basis of specific functions or services such as General Services (e.g. Public administration, Police etc.), Social Services (e.g. Education, Health, Water Supply), and Economic Services (Agriculture, Industry etc.). Each function or service is further divided into minor functional heads and sub-heads. Thus on the expenditure side the flow of resources into various functions alone is available; for what purposes the funds are utilised is not. The most important shortcoming of this classification system is the unavailability of information on purpose heads. No information is given on resource flows by way of wages and salaries, pension, subsidies, consumption expenditure of departments etc. Thus the Finance Accounts are an inadequate source of information on the subsidy expenditure of the government.

The Economic classification of the budget prepared by the Department of Economics and Statistics, Government of Kerala has reclassified and interpreted the budget into economic categories (Refer to Note 2). The three accounts in this classification system are Income and Outlay Account of Administrative Departments, Production Account of Departmental Undertakings, and Capital Finance Account of State Government. The Income and Outlay Account deals with current revenue and expenditure of government administrative departments. The total revenue of administrative departments is classified into Income from property and entrepreneurship, Interests, Direct Taxes, Indirect Taxes, Miscellaneous receipts, Revenue grants, Contributions etc. The expenditure side is classified into Compensation of employees, Commodities and Services (consumption expenditure of government), Interest, Subsidies, Current Transfer, and Savings on current account. A two-way classification of revenue and expenditure into economic heads and purpose heads, prepared by the Department gives the details of subsidies flowing to each administrative department. This information is useful in calculating explicit subsidies.

Table 3.1: Subsidy as in Economic and Purpose Classification - Kerala

Years	Subsidy (Rs. crore)	Subsidy as percentage of		
		NSDP #	Revenue Receipts	Revenue Expenditure
1993-94	87.99	0.37	2.24	2.05
1994-95	106.72	0.37	2.29	2.11
1995-96	122.81	0.35	2.26	2.11
1996-97	180.37	0.44	2.94	2.66
1997-98	185.33	0.41	2.60	2.25
1998-99	228.60	0.45	3.17	2.48
1999-2000	285.21	0.50	3.59	2.47
2000-01	174.83	0.27	2.00	1.47
2001-02	182.91	0.29	2.02	1.57
2002-03	152.10	0.21	1.43	1.03
2003-04	NA	NA	NA	NA

# Source: Reserve Bank of India, Handbook of Statistics on Indian Economy, Table 4.
NA = Not Available

Subsidy as accounted in the Economic and Purpose Classification of the budget is shown in the Table 3.1. Subsidy for all the years was distributed among three purpose heads - Social Security and Welfare Services, Agriculture Forestry Fishing and Hunting, and Mining Manufacturing and Construction. Subsidy forms a negligible share of Net State Domestic Product (NSDP). Table 3.1 also shows subsidy as percentage of revenue receipts and revenue expenditure. Subsidy as percentage of revenue receipts and revenue expenditure is small and has been declining. At first glance it may appear that the government is cutting subsidy provided through various government services. As noted in Chapter 2, the definition of subsidy in the economic classification includes under the head 'subsidies', grants made to public corporations as compensation for losses arising as a result of government policy. Assistance to the public corporations to cover operating losses is therefore not included in subsidy. Hence this turns out to be an incomplete definition of subsidy.

Table 3.2: Share of Subsidy from Government in Total Income of KSEB

Years	Total income # (Rs. crore)	Subsidy % of total income
1994-95	644.62	1.33
1995-96	783.33	7.44
1996-97	983.36	28.27
1997-98	1312.53	24.48
1998-99	1565.70	19.28
1999-2000	2042.85	16.27
2000-01	3137.69	40.81
2001-02	3358.29	39.20
2002-03	3722.53	27.27
2003-04	4068.17	24.76

Source: # Annual Report of KSEB (various issues)

Planning Commission (2002) gives information on subsidy received by State Electricity Boards from State governments. This information is compiled by the Planning Commission from the books of account of State Electricity Boards (SEBs) and Electricity Departments. For instance, according to the Planning Commission report, the subsidy received by Kerala SEB in 1994-95 was Rs. 8.6 crore and it was Rs. 464.7 crore in 1999-2000. These figures are not entered under the subsidy head in the economic classification nor in the Finance Accounts under 'assistance to SEBs.' Thus the actual subsidy given out by State government is under reported in the economic classification. The Annual Report of Kerala State Electricity Board (KSEB) gives an account of subsidies and grants received from the government in Schedule 4. Subsidy received from the government was 24.76 per cent of total income of KSEB in 2003-04 from a peak of 40.81 per cent in 2000-01 (Table 3.2).

Subsidy to KSEB on the revenue account (Schedule 4, Account code 63.111-Subsidy receivable from government) as available in the Annual Reports of KSEB are given in Table 3.3. Subsidy which is only Rs. 152.10 crore in the economic classification for 2002-03 becomes Rs. 1167.32 crore when the subsidy to KSEB is added to it. Thus the subsidy as given in the economic classification is grossly under reported. Including subsidies to other State enterprises could further increase the amount of explicit subsidy.

Table 3.3: Subsidy to Kerala State Electricity Board

(Rs. crore)

Years	Subsidy to KSEB*	Explicit subsidy @	Explicit subsidy as per cent of		
			NSDP	Revenue Receipts	Revenue Expenditure
1993-94	0	87.99	0.37	2.24	2.05
1994-95	8.56	115.28	0.40	2.47	2.28
1995-96	58.25	181.06	0.51	3.34	3.11
1996-97	278.01	458.38	1.13	7.46	6.75
1997-98	321.29	506.62	1.13	7.11	6.15
1998-99	301.90	530.50	1.04	7.37	5.75
1999-2000	332.36	617.57	1.08	7.77	5.34
2000-01	1280.46	1455.29	2.28	16.73	12.30
2001-02	1316.42	1499.33	2.35	16.56	12.86
2002-03	1015.22	1167.32	1.64	10.98	7.91
2003-04	1007.40	#	-	-	-

* Schedule 4: Subsidy receivable from government (Account head - 63.111), Annual Statement of Accounts, KSEB (various issues)
@Explicit Subsidy = Subsidy in Economic Classification + Subsidy to KSEB
Subsidy in Economic Classification is not available

Explicit subsidy (Subsidy in budget + subsidy to KSEB) share in Gross Fiscal Deficit (GFD), Revenue Deficit (RD) and Primary Deficit (PD) are indicated in the Table 3.4. Explicit subsidy share in various deficit measures has been fluctuating over the period under consideration. However, it is to be noted that explicit subsidy has always been a high proportion of primary deficit, which indicates the high levels of borrowing requirement to finance current period deficit. As per cent of NSDP explicit subsidy is 1.64 per cent in 2002-03 as against 0.21 per cent when subsidy in the budget alone was considered (Table: 3.1, 3.3).

Table 3.4: Share of Explicit Subsidy in Deficits

Years	Percentage of		
	GFD	RD	PD
1993-94	9.41	23.68	35.44
1994-95	10.40	28.83	39.89
1995-96	13.90	44.95	47.84
1996-97	29.72	71.28	104.40
1997-98	20.99	45.12	44.92
1998-99	17.61	26.13	33.88
1999-2000	13.62	17.04	23.92
2000-01	37.53	46.24	89.82
2001-02	45.86	57.54	192.24
2002-03	23.39	28.34	57.13

GFD = Gross Fiscal Deficit, RD = Revenue Deficit, PD = Primary Deficit
Values of GFD, RD and PD were taken from Kerala Budget-in-brief (various issues)

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3.II.2 Losses of State Enterprises

While measuring explicit subsidy it is also important to analyse the financial losses of State enterprises. Planning Commission (2002) reports losses of State Electricity Boards (SEBs) with and without subsidies. For instance the commercial profit/loss of all SEBs and of KSEB is presented in the Table 3.5. There is increasing difference in the losses with subsidy and without subsidy, not only in the particular case of KSEB, but also for all SEBs taken together. Thus subsidy appears to be a tool to cover losses of SEBs. Similar could be the situation with other State enterprises also.

The losses of public corporations/enterprises are financed by loans and advances from public/private financial institutions. These loans and advances are guaranteed by the State government and in the event of default must be paid by the State through budgetary allocations for the same. Thus the stock of debt and interest payable of the public sector enterprises and non-departmental undertakings would form part of the Public Sector Borrowing Requirement (PSBR). The Gross Fiscal Deficit (GFD), which is the sum of deficit on the revenue account and capital account of the government, is the other component of PSBR.

We consider two of the largest public enterprises in Kerala - Kerala State Electricity Board (KSEB) and Kerala State Road Transport Corporation (KSRTC), add their net losses to the GFD to arrive at what could be a good estimate of PSBR. The Table 3.6 indicates the losses of two of the largest public enterprises of Kerala - KSEB and KSRTC. The losses of these enterprises along with the GFD form part of Public Sector Borrowing Requirement. The GFD indicates only the deficit in the government's accounts. The effect on fiscal imbalance could be greater when PSBR is considered.

Table 3.5: Commercial profit/loss of SEBs with and without subsidy

(Rs. crore)

Years	Total Commercial profit/loss of SEBs		Commercial profit/loss of KSEB	
	With subsidy	Without subsidy	With subsidy	Without subsidy
1992-93	- 2725	- 4560	- 65	- 65
1993-94	- 2706	- 5060	- 75	- 75
1994-95	- 998	- 6125	- 120	- 129
1995-96	- 1178	- 8770	-130	- 183
1996-97	- 4674	- 11305	- 176	- 208
1997-98	- 7598	- 13963	- 199	- 199
1998-99	- 10509	- 20860	- 205	- 411
1999-2000 (P)	- 15088	- 26353	- 181	- 646
2000-01 (RE)	- 17794	- 25259	- 348	- 1129

Source: Planning Commission (2002)
Note: (-) sign indicates loss

The data for this exercise is from the Annual Report (2001-02) on the Working of State Electricity Boards and Electricity Departments (Planning Commission, 2002) and the Annual Accounts and Audit Report of KSRTC (various issues). The losses of KSEB and KSRTC are given in the Table 3.6. The public sector's deficit increases significantly when losses of the two public enterprises are added to GFD. The increase is as much as Rs. 574 crore in 2001-02. PSBR is also higher as percentage of NSDP. This clearly indicates that GFD does not provide a complete picture of fiscal imbalance in the State. More importantly to the context of our study, losses of the public sector in the ultimate analysis constitute a part of explicit subsidy. When the estimate of losses is added to the available measure of subsidy, total budgetary subsidy is much higher than is generally shown as subsidy in the budget.

Table 3.6: Losses of KSEB and KSRTC as part of PSBR

(Rs. crore)

Years	Commercial profit (+)/ loss (-)		GFD	PSBR	GFD as % of NSDP	PSBR as % of NSDP
	KSEB	KSRTC				
1993-94	-75	-29	935.45	1039.45	3.92	4.36
1994-95	-120	0.095	1108.65	1228.56	3.82	4.23
1995-96	-130	-17	1302.66	1449.66	3.69	4.10
1996-97	-176	-28	1542.48	1746.48	3.79	4.29
1997-98	-199	-51	2413.85	2663.85	5.38	5.94
1998-99	-205	-72	3012.20	3289.20	5.90	6.44
1999-2000	-181	-123	4534.56	4838.56	7.97	8.50
2000-01	-348	-161	3877.80	4386.80	6.09	6.88
2001-02	-445	-129	3269.40	3843.40	5.12	6.02
2002-03	NA	-107	4990.04	5097.04*	7.02	7.17*

Note: * PSBR and Share in NSDP excluding loss of KSEB

3.III Chapter Summary

This chapter examined the explicit subsidy situation in India and more particularly in the case of Kerala. It was found that the amount of subsidy given by the State government is small, but this is because it is narrowly defined. When we identify subsidy received by particular State enterprises from their books of account, it is found that the subsidy in the budget is greatly under reported.

The analysis of subsidies in India has been fragmented. Discussions revolve around food and fertiliser subsidies given by the Central government, from a variety of perspectives. Subsidies given by States are rarely discussed. Food and fertiliser subsidies dominate the Central government's subsidy bill. The growth in Central

subsides has not been adversely affected by the reform process that began in early 1990s. The Centre's subsidy bill was 1.76 per cent of GDP in 2003-04. This share has been declining only because the GDP growth rate has been higher.

Subsidy given by Government of Kerala, as accounted in the budget is very small. In 2002-03 it was only Rs. 152.10 crore, which was 0.21 per cent of NSDP and 1.03 per cent of revenue expenditure. However an examination of the definition of subsidy in the budget reveals that it is very narrow. It does not include the large assistance given to State public enterprises. Examination of the accounts of these enterprises reveals that subsidy is used as a tool to cover their losses. Losses that are left uncovered by subsidy are financed by loans from financial institutions and are guaranteed by the State government. Thus not only subsidy, but also public sector debt can have a significant impact on the State's finances.

CHAPTER 4

IMPLICIT SUBSIDY: A CRITIQUE OF METHODOLOGY

The broad definition of implicit subsidy is "cost of provision minus recoveries". Within this broad definition the framework used by different studies is different, causing wide divergence of estimates. The differences arise in definitions of variables and specification of the equation. The aim of this chapter is to review these issues in the estimation procedure, with a view to develop a framework that is more accurate in estimating subsidies. It offers a critique of some studies that estimated implicit subsidy in the context of Kerala.

4.1 Review of Methodology

4.1.1 Previous Studies on Implicit Subsidy

The literature on estimation of implicit subsidy is limited. The major studies are based on, what can be called, the 'cost recovery framework.' To illustrate, Mundle and Rao (1991) developed a framework to measure budgetary subsidy as cost of services minus recoveries. That study measured subsidy for the Centre and fourteen major Indian States (including Kerala) for 1987-88. The services of the government were classified as General, Social and Economic Services as in the budget. The General Services being public good in nature, they were excluded from the scope of subsidy, and subsidy was calculated for Social and Economic Services only. In a similar framework, Srivastava and Sen (1997) estimated subsidies for the Centre and fifteen States in 1993-94. The budget classification was again adopted and Social and Economic Services were further divided into Merit and Non-merit heads depending upon externalities associated with each service head. Thus Merit head under Social Services included elementary education, public health, sewerage and sanitation, information and publicity, welfare of scheduled castes, scheduled tribes etc, labour, social welfare and nutrition. The Non-merit head under Social Services included

education (other than elementary education), medical and family welfare, water supply and sanitation, housing and urban development, social security and other social services. Similarly Merit head of Economic Services included among others soil and water conservation, forestry and wildlife, roads and bridges etc. The Non-merit head of Economic Services included agriculture, rural development, irrigation, power, industries, transport etc. Deficit sectors i.e. sectors with cost greater than recoveries were separated from surplus sectors in order to arrive at the quantum of subsidy. The total subsidy in a State was the sum of subsidy of deficit sectors.

Srivastava and Rao (2003) studied the Centre and twenty-five States for 1998-99 using the cost recovery framework. The Merit Services were further divided into Merit I and Merit II heads. The study by Anand and Jha (2004) is the most recent and a critique of Srivastava and Sen (1997). They modified the cost recovery framework and worked out estimates of subsidy for Maharashtra in 1998-99, which were much less than those estimated by using other methods.

The results of major studies for Kerala made in the cost recovery framework are indicated in Tables 4.1 and 4.2 below. The results are not comparable because of differences in the definition of variables; they are however useful in drawing the broad contours of subsidy situation in Kerala.

Table 4.1: Estimates of Subsidy to Social Services – Kerala

	M&R	S&S	S&R
Period of study	1987-88	1993-94	1998-99
Share of total subsidy (%)	68.18	59.00	49.00
Education subsidy*	64.00	63.00	51.00
(Recovery rate)	(3.38)	(1.85)	(2.22)
Medical and Public Health*	17.00	16.00	20.3
(Recovery rate)	(2.81)	(0.79)	(3.2)
Water Supply, Sanitation, Housing*	10.8	9.67	9.1
(Recovery rate)	(1.23)	(0.49)	(3.41)

Source: own calculations from appendix tables
M&R = Mundle and Rao (1991); S&S = Srivastava and Sen (1997);
S&R = Srivastava and Rao (2003)
* Subsidy as % of social Services subsidy

Recovery rate = $\dfrac{\text{Re cov} ery}{Total \cos t} \times 100$

The Table 4.1 describes the subsidy to Social Services. Subsidy to Social Services as share in total subsidies can be said to have decreased from 68.18 per cent in 1987-88 to 49 per cent in 1998-99. These figures are not strictly comparable but the general trend can be seen. The Table shows the share of the three highest subsidy sectors within Social Services. Education is the highest subsidy sector attracting more than 50 per cent of subsidy going to Social Services. The recovery rate[22] for Education, indicating what proportion of expenditure is recovered in the form of revenues and other returns is very low. The State's initiative in providing basic education to all sections of people can be the reason for low recovery rate as well as high proportion of subsidy flowing to Education. The recovery rate for Water Supply, Sanitation and Housing seems to have improved; however this cannot be convincingly stated.

Table 4.2: Estimates of Subsidy to Economic Services – Kerala

	M&R	S&S	S&R
Period of study	1987-88	1993-94	1998-99
Share of total subsidy (%)	31.82	40.2	50.5
Agriculture & Allied Services* (Recovery rate)	29.65 (32.56)	20.00 (4.9)	52.6 (2.9)
Irrigation* (Recovery rate)	36.55 (7.36)	19.6 (1.17)	14.5 (1.49)
Power and energy* (Recovery rate)	Surplus sector (145.44)	4.86 (nil)	#
Transport & Communication* (Recovery rate)	23.9 (4.49)	18.76 (4.3)	#

Source: own calculations from appendix tables
M&R = Mundle and Rao (1991); S&S = Srivastava and Sen (1997);
S&R = Srivastava and Rao (2003)
* Subsidy as % of economic Services subsidy
# Classification not available

$$\text{Recovery rate} = \frac{\text{Re}\,cov\,ery}{Total\,\cos t} \times 100$$

The Table 4.2 similarly indicates shares of the highest subsidy sectors under Economic Services. The share of Economic Services in total subsidy has decreased, corresponding to the increase in share of Social Services. Agriculture & Allied Services is the highest subsidy head. Power & Energy, which was a surplus sector in 1987-88, is

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[22] Revenues in the form of user fees, interest receipts from loans advanced to institutions and dividend receipts from investment in public enterprises are included in recovery.

now a subsidy sector. The recovery rates for various Economic Services are also low considering the high investment levels involved.

The studies referred to above estimate implicit subsidy arising out of government provision of services. Indeed these provide valuable information to evaluate the role of subsidy in fiscal imbalance. However useful these estimates may be, certain methodological problems do exist and limit the credibility of estimates of implicit subsidy. The foremost methodological question is conceptualisation of what constitutes an implicit subsidy.

4.1.2 What Goods and Services Qualify for Subsidy?

A host of goods and services are provided through government machinery and these can be classified under the heads of public goods (or services), privately consumed goods and merit goods; which lie between these two extremes. The "exclusion principle" and "rival consumption" distinguish private goods from public goods[23]. When either or both of these principles are not satisfied, a budgetary process is necessary to provide that service.

A good (or service) which is non-rival and for which exclusion is not possible is a pure public good and it has to be provided by the government through its own resources. These include services such as general administration, law and order, and defence and other services, which come under the budgetary classification of General Services. There are other goods (called merit goods), which are rival and excludable, with associated externalities, and goods for which one of these principles is not satisfied, resulting in market failure, necessitating government intervention in their provision. This intervention may take the form of tax incentives and subsidies. Privately consumed goods (for which both principles of rival consumption and exclusion are applicable, with no externalities) can be transacted in the market. Subsidies for privately consumed goods arise when the government intervenes in their provision. Merit goods and privately consumed goods, produced entirely or partly by the government, are classified under the heads of Social Services and Economic Services in the budget. Subsidies are relevant for services under these heads.

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[23] Exclusion principle allows some mechanism (particularly price in the market) whereby one consumer can be allowed to consume the good, at the same time disallowing another.
Rival consumption implies that when an individual consumes a good it reduces the availability of that good to another consumer.

4.1.3 Defining Implicit Subsidy

Implicit subsidy has been defined in various ways the simplest being revenue gap (Ahuja, 2005) i.e. revenue expenditure net of revenue receipts. Other studies refer to 'unrecovered cost' as implicit subsidy. There is however, an important difference between the two definitions. Both concepts are differences between expenditure and revenue components. Revenue gap is the difference between revenue expenditure and revenue receipts, while unrecovered cost has cost of delivering a service, on the expenditure side, which accounts for both current cost and fixed cost.

Mundle and Rao (1991) described subsidies as the "difference between the cost of delivering publicly provided goods or services and the recoveries arising from such deliveries." Apart from explicit subsidies defined in the budget, it includes "losses of departmental enterprises" and "subsidies to households implicit in the provision of Social and Economic Services below cost as well as the unrecovered cost of loans given and investments made in departmental enterprises and co-operatives." However as Ahuja (2005) has pointed out "the entire unrecovered cost cannot be called assistance to users." Government provision involves higher cost "due to various reasons such as larger workforce or higher salaries or simply inefficiency" (Ahuja, 2005). Thus a meaningful definition of subsidy must make a distinction between actual subsidy and the cost due to inefficiency.

Later studies described the difference between cost of delivery and corresponding recoveries as 'unrecovered' cost (Srivastava and Sen, 1997; Srivastava and Rao, 2003; and Anand and Jha, 2004) particularly for those services for which the principle of rivalry and excludability are applicable. "It should be possible to recover, at least in principle, the cost of providing services according to the extent of their consumption" (Srivastava and Sen, 1997). If the idea is to describe the difference between expenditure and revenue as subsidy, then it cannot at the same time be termed as 'unrecovered' cost. The objective of government subsidising a good is to distribute benefits across society. The poorer section will derive greater benefit from a particular provision, than the same provision to a richer group. Hence subsidisation is bound to have greater utility for the poor than for the rich. If the cost of publicly provided privately consumed goods is to be recovered in direct proportion to the level of consumption of the good (Anand and Jha, 2004), it implies that the burden of contributing to cost recovery will be greater for the poor than for the rich. This goes against the very objective of giving subsidy i.e. to distribute benefits across society. Hence implicit subsidy and unrecovered cost leads to contradictory nomenclature. It would serve better to call implicit subsidy as *uncovered cost*, because it is that part of cost that is not covered by recoveries and must be financed through the budget.

4.1.4 What is the Cost of Delivering a Service?

The Finance Accounts present the expenditure incurred on government operations in the form of revenue account and capital account. The major heads relevant for estimation of subsidies are Social Services and Economic Services. Revenue expenditure and capital expenditure are presented for each service under the major service heads. From the economic classification of the budget it is known that the items under revenue expenditure are compensation to employees, consumption expenditure of the government, interest, subsidies, current transfers and savings on current account, which can be considered as variable cost. Capital expenditure, which is met usually from borrowed funds with the object of increasing concrete assets of a material and permanent character, can be considered as fixed cost.

Not all items under revenue expenditure go into provision of the service. Items such as Transfer to reserve funds/Deposit accounts and other net transfer items are merely book-keeping entries. Since they are not expenditure incurred on actual provision, such items must be netted out from revenue expenditure. Items such as Assistance to local bodies/Municipalities (for most sub-heads under Social and Economic Services), Assistance to Public Sector Undertakings and Assistance to Co-operatives (under sub-heads in Economic Services) are not expenditure on direct provision by the government but are payments to intermediate agencies which are the actual providers of the service. These agencies, with their own budgets, in effect lie outside the government proper. However since these items of expenditure are accounted for in the budget as incurred on provision of certain services, these must be included in the variable cost.

Transfers to individuals and transfers to local bodies and co-operatives are items whose inclusion in variable cost is contentious. (These) cannot be treated as costs incurred in the public provision of a service, which could be priced in principle (Mundle and Rao, 1991). The argument is that such income is not spent solely or entirely on the service for which it is intended. This would be true for instance in the case of scholarship for education, where transfer is in the form of cash. But transfer in the form of fee waiver directly increases consumption of education, and is clearly a subsidy. It must be recognised however that transfer payments (e.g. scholarships to individuals) are intended to increase consumption; hence they are in fact a form of direct subsidy.

All the studies so far have excluded the general secretariat expenses of Social and Economic Services from the cost of provision. Such exclusion is unwarranted because administrative expenses would not have existed if the government were not providing

the Social and Economic Services. Since secretariat expenses arise because of provision of services, they must be a part of cost.

Mundle and Rao (1991) consider interest cost and depreciation cost as together constituting the fixed cost associated with the current level of a service. A similar concept is adopted by Srivastava and Sen (1997). Both studies weight capital stock in each sector with the depreciation rate and the interest rate, the latter representing opportunity cost of money for the government. However, opportunity cost arises only in the period in which the investment is made. Once a certain amount of money is invested in creating a durable asset in any sector, it cannot be used for any other purpose. From the next period the asset incurs only depreciation cost. Hence opportunity cost and depreciation cost cannot go together. Including both elements in cost of provision leads to double counting.

4.1.5 Fixed Cost of Services

Fixed cost does arise when capital stock is employed in providing a service. The economy's capital stock consists of different types of assets of varying value and vintage. Examples include buildings and teaching equipment for education, medical equipment and laboratory facilities for health services, canals and dams for irrigation, infrastructure for manufacturing etc. In a particular period capital assets contribute to production process in the form of capital services. For example, a factory enables the organisation of production activity within itself, a road facilitates transportation, a power generation plant produces electricity which is used as a factor of production, etc. The value of these services, which are employed in the production process, becomes an element of fixed cost.

Two types of cost are involved in employing capital. There is a cost involved in employing assets in the production process. These costs being proportional to the final good or service that is produced will be included in the variable cost. The other component is the cost of wear and tear of existing assets. At each point in time capital goods decline in efficiency and in order to maintain their productive capacity some allowance must be made. This allowance is accounted for by depreciation.

The Finance Accounts gives the stock of capital at the beginning of the year for each service head. This capital stock is the sum of investments in previous years at prices prevailing in those years i.e. the sum of investments in current prices. There is no further information in the Finance Accounts of the composition of assets or of their vintages. In order to apply any measure of depreciation the capital stock must be revalued at the present period prices. This revalued capital stock when weighted by a

(real) rate of depreciation will give the depreciation cost at prices in the present year. To illustrate, capital stock at the beginning of 2003-04 is the sum of investments in the previous years. Suppose Rs. 10,000 was invested in sector 'j' in the year 1990-91 and the rate of depreciation is 2% (assumed by earlier studies), at 1990-91 prices the depreciation cost would be Rs. 200. The asset would incur depreciation from 1991-92 onwards, when the value of money would also have changed. Thus Rs. 200 in 1990-91 would be worth Rs. 300 in 1991-92. Thus every year the original depreciation cost of Rs. 200 should be indexed with inflation. This would be true of investment made each year. Thus the depreciation cost in 2003-04 is the sum of various indexed terms, the index depending upon when each investment was made.

Calculation of depreciation cost in this manner requires enormous amount of information. If we want to calculate depreciation cost for 2003-04 for instance, we need to know the vintage of capital stock in that year. If the lifetime of assets is fifty years (as has been assumed by various studies) then we need to know the investment in each of the last fifty years that have created assets that are in operation in 2003-04. The depreciation rate must then be applied to investment in each year to give the depreciation allowance. The depreciation allowance for each of the fifty years must be indexed to an inflation rate to reflect its value in 2003-04. The indexed depreciation allowances when summed will give the depreciation cost for 2003-04. This method requires enormous amount of information on the vintage composition of capital stock given the assumed lifetime of assets, and extracting this information from the Finance Accounts is a cumbersome process.

Mundle and Rao (1991), and Srivastava and Sen (1997) arrive at the depreciation cost in the following manner. Capital stock at the beginning of the year is weighted by the nominal depreciation rate. The nominal depreciation rate is calculated as the sum of real depreciation rate and the inflation rate. In notational form depreciation cost is given by,

$$Depreciation\ cost = d.K_j = (d^* + \pi) . K_j$$

Where,

K_j = capital stock at the beginning of the year

d = nominal depreciation rate

d^* = real depreciation rate

π = inflation rate

The additive function above is the sum of real depreciation and an inflation-indexed term of capital stock. This is not an expression for nominal depreciation reflecting the changing value of money. The additive function as given above is

incorrect. The index of inflation must be a multiplicative factor of the depreciation, as in Anand and Jha (2004). However, their definition of depreciation cost as $d^*.\pi.$ K_j implies that the entire capital stock was created in the previous period and it is indexed by the current period's inflation. It does not account for different vintages of capital, which must be weighted according to when the investment was made.

4.1.6 An Approximation for Calculating Depreciation Cost

Information on vintage of capital must be extracted from the Finance Accounts, which is a cumbersome process. Hence the need for the next best alternative. We use the method adopted in the manufacturing literature (Srivastava, V, 1996; Balakrishnan, P. et al, 2000; Parameswaran, M., 2002) to construct the variable, capital stock for the government sector. These studies use the balance sheet data on variables like output, capital etc., which are provided in nominal terms and transform them into variables in real terms using appropriate price deflators. For measuring capital stock "... most of the current studies use the book value of fixed assets deflated by an investment goods deflator - mostly the wholesale price index for machinery and tools, this is plain wrong, for it makes no allowance for vintage (Balakrishnan, P. et al, 2000).

The method of constructing capital stock involves revaluing the capital stock at historic prices to the replacement cost values. The replacement cost is the cost of replacing the capital stock in the current period. This cost will depend upon the age of the asset and the remaining productive years. The capital stock at historic cost must be scaled up by a replacement factor, which converts the capital stock at historic costs to capital stock at replacement cost. For ease of analysis we use three assumptions to arrive at the replacement factor – assumed lifetime of assets, the rate of price change of capital (assumed to be constant), and the growth rate of investment (also assumed to be constant).[24] The methodology has been explained in the next chapter.

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[24] Several points of criticism arise in the calculation of the replacement factor itself. An average lifetime of fifty years for capital stock in government sector is too broad an assumption. The lifetime of assets in education, which is an important investment area for the government of Kerala, is small compared to lifetime of assets in other sectors like irrigation, power and transport. Calculation of price change of capital requires information on state level prices which may not be available for Kerala. This brings in another assumption that prices of assets in Kerala follow that at the All-India level. Bulk of investment in social sectors in Kerala happened in early seventies. Hence growth rate of investment during this period would have been much higher than what it is now. The availability of data will dictate the number of years which are considered for taking average.

4.1.7 The Cost of Financial Investment

Apart from investing in physical assets government provides financial assistance in the form of loans and advances and invests in share capital of public enterprises. These are accounted under capital expenditure of various Social and Economic Services. Any expenditure of this kind has an opportunity cost for the government because it could have been spent elsewhere or would have yielded returns on another investment. Assuming that the only other investment opportunity for the government is bank deposits, an opportunity cost can be calculated with a bench mark interest rate. Mundle and Rao (1991) use an effective interest rate on government debt, calculated as the ratio of domestic interest payments to the stock of domestic public debt. Srivastava and Sen (1997) use the average rate of interest on internal and external debt as the representative rate. Anand and Jha (2004) use an average interest rate on current deposits in banks. All of them are approximations and the superiority of one over another cannot be resolved easily.

4.2 Chapter Summary

Earlier studies, which calculated implicit subsidy using the broad definition of 'cost of provision minus recoveries', show that the trend has been of Social Services receiving a larger proportion of total subsidy than the Economic Services. Among Social Services, Education is the major subsidy receiving sector. This is a reflection of the level of government intervention in providing universal literacy. Agriculture and allied activities is the major subsidy receiving sector among Economic Services. The recovery rates for both Social Services and Economic Services has been low.

The provision of subsidy is relevant for goods that satisfy principles of exclusion and rival consumption, i.e. for privately consumed goods and merit goods. Merit goods have the additional quality of possessing externalities. Privately consumed goods and merit goods are provided by the government under the budget heads of Social Services and Economic Services.

The nomenclature of 'unrecovered' cost to describe implicit subsidy is misleading. Unrecovered cost implies that government expenditure on Social and Economic Services must be recovered from those receiving it. This goes against the notion of subsidy as a tool to distribute benefits in society.

The cost of delivering a service is different from expenditure on a service. Cost of delivery has two components – variable cost and fixed cost. Various items that go into variable cost can be derived from revenue expenditure. However care must be taken to exclude intergovernmental transfers and transfers to reserve funds/deposit

accounts, as these are merely bookkeeping entries. Fixed cost comprises of depreciation cost on physical capital and opportunity cost on government financial investment.

Calculation of depreciation cost is tricky. Capital stock as accounted in the Finance Accounts is the sum of investments at historic prices. Attributing a real rate of depreciation to these entries of capital stock does not account for the changing value of money. Hence the capital stock at historic prices need to be revalued to their replacement cost equivalents for us to attribute a real rate of depreciation.

CHAPTER 5

IMPLICIT SUBSIDY IN KERALA - AN ALTERNATIVE METHODOLOGY AND ESTIMATE

The previous chapter reviewed the methodology of estimating implicit subsidy adopted by major studies and highlighted the limitations of the same. Section I of this chapter offers a refinement of the cost recovery framework with the aim to arrive at a more accurate estimate of implicit subsidy. We expect the refined framework to give estimates that are much lower than those provided by earlier studies for two reasons – one, we argue that subsidy is relevant to only Non-merit services, leaving out Merit services which were also included in subsidy estimation by earlier studies. The other reason for smaller estimates is the methodological refinement. Implicit subsidy has been estimated in section II, using the refined methodology for the special case of Kerala for four time points - 1989-90, 1995-96, 1998-99 and 2003-04.

SECTION I

5.I Methodology

This section offers a refinement of the cost recovery framework used by several studies to estimate hidden (implicit) budgetary subsidies. The refinement is in the form of revaluing capital stock given in historic prices in the budget to replacement cost values to enable application of a real depreciation rate and get the depreciation cost of capital. Depreciation cost of capital and opportunity cost of government investment are the components of fixed cost of delivering a service by the government. Variable cost is derived from various items in revenue expenditure. Total cost net of recoveries from services gives the quantum of implicit subsidy in the budget.

5.I.1 A Refined Methodology for 'New' Estimates of Implicit Subsidy

The basic framework for estimating implicit subsidy is called the cost recovery framework, adopted by Mundle and Rao (1991) and used by subsequent studies.

Implicit subsidy, which arises in case of services provided by the government that are not public good in nature, is defined as the difference between cost of delivering the service and the recoveries from such delivery. The cost component has two parts – the variable cost and the fixed cost. The recoveries consist of user fees, interest and dividend receipts. The variable cost can be approximated by revenue expenditure. The revenue expenditure is net of inter and intra governmental transfers and includes transfers to individuals. The fixed cost comprises of depreciation cost of physical capital in the provision of the service and the cost of financial investment by the government in the form of loans and advances and equity investment.

In notational terms this definition of implicit subsidy may be expressed as follows:

$$IS = RX + d \cdot Kr + i \cdot (Z + L) - (RR + I + D)$$

Where,

IS = Implicit subsidy

RX = Revenue expenditure

$d . Kr$ = Depreciation cost

d = Depreciation rate

Kr = Capital stock in the beginning of the year at replacement cost

$i . (Z + L)$ = Opportunity cost of government investment

i = Interest rate that reflects the opportunity cost of government investment

Z = equity or investments in PSEs and co-operatives at beginning of period

L = Loans to PSEs and other institutions at the beginning of the period

RR = Non-tax revenue receipts

I = Interest receipts on loans

D = Dividend receipts from equity investments

Data for the estimation of implicit subsidy is available from the Finance Accounts except for capital stock at replacement cost (Kr). This variable must be constructed from the capital stock at historic prices given in the Finance Accounts. The methodology for this has been developed in Srivastava (1996) and is explained in the following sub section.

5.I.2 Arriving at Capital Stock at Replacement Cost

The Finance Accounts give (gross) capital stock at the beginning of the year. Capital stock at historic prices (CS^h_t) is the sum of investments in previous periods at those prices. Thus,

$$CS^h_t = P_t I_t + P_{t-1} I_{t-1} + P_{t-2} I_{t-2} + \ldots\ldots\ldots\ldots$$

Where, I_t = Real investment in year 't'

P_t = Price of capital in year 't'

Capital stock is the sum of investments in infinite time periods, and assuming the growth rate of investment (g) and rate of price change of capital (π) are constant, we have,

$$CS^h_t = P_t I_t \frac{(1 + g)(1 + \pi)}{(1 + g)(1 + \pi) - 1}$$

The balance sheet value of capital stock is scaled up by a revaluation factor (RF) to obtain the value of capital at replacement cost. Thus,

Replacement cost of capital = RF. (value of capital stock at historic cost)

Capital stock at replacement cost (CS^r_t) implies that,

$$CS^r_t = P_t I_t + P_t I_{t-1} + P_t I_{t-2} + \ldots\ldots\ldots\ldots$$

$$= P_t I_t \frac{(1 + g)}{g}$$

Thus revaluation factor is,

$$(RF_t) = \frac{CS^r_t}{CS^h_t}$$

$$= \frac{(1 + g)(1 + \pi) - 1}{g(1 + \pi)}$$

The expression for revaluation factor will hold good only when growth rates of investment (g) and of price change of capital (π) are positive. When,

$$g > 0 \text{ and } \pi > 0,$$

$$(1 + g)(1 + \pi) > 0$$

Assets do not have infinite lifetime and a certain maximum lifetime must be assumed. If it is assumed that the capital stock has maximum lifetime of τ years (various studies assume lifetime of 50 years), then the revaluation factor is as given below.

$$RF_t = \frac{[(1+g)^{\tau+1} - 1](1+\pi)^{\tau}[(1+g)(1+\pi)-1]}{g\{[(1+g)(1+\pi)]^{\tau+1} - 1\}}$$

Replacement factor must be calculated for each year of analysis. Multiplying the replacement factor with capital stock at historic values will give capital stock at replacement cost for that year. Applying the rate of depreciation to this capital stock will give the depreciation cost for that year.

5.I.3 Data Source and Variables

Data for estimation of implicit subsidy using the refined methodology can be taken from Finance Accounts of State governments.

Variable cost is taken as revenue expenditure, which is net of inter and intra governmental transfer to funds, and includes transfers to individuals. For Government of Kerala for example, revenue expenditure is available in Statement No. 12 (Detailed account of expenditure by minor heads) in the Finance Accounts. Fixed cost is the sum of depreciation cost and opportunity cost of government investment. The depreciation cost is the product of capital stock at replacement cost at the beginning of the year and the real rate of depreciation. The real rate of depreciation is assumed to be 2 per cent as previous studies have used. The opportunity cost of government investment is derived by weighting the equity and loans to Public Sector Enterprises (PSEs), co-operatives and other institutions by the interest rate. The loan component is derived from Statement No. 18 (Detailed statement of loans and advances made by government). The effective interest rate on government debt, calculated as the ratio of domestic interest payments to the stock of domestic public debt is used to reflect the opportunity cost. The interest payment is given in Statement No. 12 (Detailed account of expenditure by minor heads) and includes interest on internal debt, interest on

small savings, Provident Fund etc. and interest on loans and advances from Central Government. The stock of public debt as at the beginning of the year is available in Statement No. 17 (Detailed statement of debt and other interest bearing obligations of the government). It includes public debt and Small Savings, Provident Fund etc. The recoveries from government service are the sum of revenue receipts, dividend receipts and interest receipts from government enterprises. Revenue receipts are available from Statement No. 11 (Detailed account of revenue receipts and capital receipts by minor heads). Details of dividends are available in Statement No. 14 (Statement showing details of investments of government in statutory corporations, government companies, other joint stock companies, co-operative banks, societies etc.) The interest receipts are derived from Statement No. 18.

5.I.4 Calculation of Capital Stock at Replacement Cost

The Finance Accounts give capital stock at historic prices. We use this value of capital stock at the beginning of the year and multiply it by a replacement factor to get capital stock at replacement cost for each time point of analysis. Calculation of the replacement factor for each year requires three parameters – the assumed lifetime of assets, the rate of price change of capital assets and the growth rate of investment. The rate of price change and the growth rate of investment are assumed to be constant over the lifetime of assets. Previous studies have assumed a lifetime of 50 years. By this assumption we need data on prices and investment for 50 years prior to the point of reference to calculate replacement factor, which is not available. There is no information on the prices of capital assets in the government sector at the State level; so it is assumed that the price of capital assets in a State follow the same trends as at the national level. The National Accounts Statistics (CSO, various issues) gives Gross Domestic Capital Formation in Public Sector. Because of data constraints we have assumed the maximum life of assets to be 25 years. The price change of assets is calculated as the Compound Annual Growth Rate[25] (CAGR) of implicit price deflators for 25 years prior to the time of reference. The growth rate of investment is the CAGR of investment at constant prices (base: 1993-94) over a period of 25 years. Using these parameters the replacement factor has been calculated for the reference time point. The product of replacement factor for a particular year and the capital stock at historic prices gives the capital stock at replacement cost for that year.

$$[25]\ \text{CAGR} = \left[\left(\frac{\text{Ending value}}{\text{Beginning value}} \right)^{\frac{1}{\text{no. of years}}} - 1 \right] \times 100$$

Obviously this approximation is wrought with limitations. In the first place the assumption of fifty years lifetime of assets as in previous studies is not justified. Different government services use different types of capital with varying vintages. For instance, the assets in education are very different from those used in irrigation or transport and also have much shorter life. Hence it is incorrect to generalise the life of assets as fifty years. Again in this exercise it has been assumed as 25 years simply because of non-availability of a longer data series. This assumption is again not justified. Secondly we have used a single replacement factor for capital under all service heads, whether social or economic. Ideally different types of capital should have different replacement values depending upon their individual prices and investment growth. This has not been done because of lack of more extensive data.

SECTION II

5.II.1 New Estimates of Implicit Subsidy

Some of the earlier studies that estimated implicit subsidy classified the Social and Economic Services in the budget into Merit and Non-merit heads, and Merit services further into Merit I and Merit II. The General Services such as general administration, police and others being public good in nature were excluded from estimation of subsidy. Merit services included service heads with high levels of externalities, such as elementary education, public health, sewerage & sanitation, information & publicity, welfare of scheduled caste, scheduled tribes etc., labour, social welfare & nutrition among Social Services, and soil & water conservation, forestry & wildlife, roads & bridges under Economic Services. The remaining services under Social and Economic Services were classified under the Non-merit category. Services grouped under Merit head have features of public goods hence they should ideally be excluded from the consideration of subsidy. Expenditure on these services is an obligation of a socialist State hence the arguments that apply to the exclusion of General Services can be extended to Merit services also.

We use the same argument and classify services into Merit and Non-merit heads. Under Social Services, we consider Elementary and Secondary Education, Public Health, Family Welfare, Water Supply & Sanitation, Information & Broadcasting, Welfare of SC, ST & OBCs, Labour, Social Welfare & Nutrition as Merit services, for which the uncovered cost is not regarded as subsidy. Similarly, Forestry & Wildlife, and Rural Development under Economic Services are Merit services. Also any sector that is in surplus with greater revenue over cost is considered a surplus sector and has not been aggregated with subsidy sectors. Subsidy has been estimated using the

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suggested refinement in methodology for four time points – 1989-90, 1995-96, 1998-99 and 2003-04 for Kerala. Subsidy estimates are presented in two ways – in the first case all heads under Social and Economic Services have been aggregated together, so the estimate we get is called the uncovered cost. In the second case only Non-merit services are aggregated and this uncovered cost is considered as implicit subsidy. The results for 2003-04 are presented below.

The Table 5.1 shows estimates of implicit subsidy in 2003-04. Considering subsidy to be applicable only to Non-merit services, in 2003-04 the New Estimates show that total implicit subsidy for the Government of Kerala was Rs. 3,690.20 crore of which Rs. 665.09 crore, or 18.02 per cent went to Social Services and the remaining Rs. 3025.11 crore i.e. 81.97 per cent went to Economic Services. Total implicit subsidy, by excluding Merit services was 66.62 per cent of Gross Fiscal Deficit and 100.26 per cent of revenue deficit in 2003-04. As percentage of revenue expenditure and revenue receipts total implicit subsidy was 23.81 per cent and 31.23 per cent respectively.

Table 5.1: New Estimates of Implicit Subsidy, Kerala – 2003-04

		New Estimates of subsidy (Rs. crore)	Subsidy as % of			
			Revenue Receipt	Revenue Expenditure	Revenue Deficit	Gross Fiscal Deficit
Social Services	With Merit Services	5128.76 (57.44)*	43.41	33.09	139.35	92.59
	Without Merit Services	665.09 (18.02)*	5.63	4.29	18.07	12.00
Economic Services	With Merit Services	3798.93 (42.55)*	32.15	24.52	103.22	68.58
	Without Merit Services	3025.11 (81.97)*	25.60	19.52	82.20	54.61
Total Subsidy	With Merit Services	8927.69 (100.00)*	75.56	57.61	242.58	161.18
	Without Merit Services	3690.20 (100.00)*	31.23	23.81	100.26	66.62

*Note: figures in brackets denote percentage of total subsidy

On including both Merit and Non-merit services under the purview of subsidies, the total uncovered cost in 2003-04 becomes Rs. 8927.69 crore. This is Rs. 3960.60 crore more than subsidy calculated without including Merit services. With complete aggregation Social Services account for 57.44 per cent of uncovered cost while Economic Services are 42.55 per cent. Their percentage with respect to various deficit measures are also higher than subsidy without Merit services. Incorrectly aggregating Merit services thus inflates the quantum of subsidy.

In the analysis that follows we consider subsidy only for Non-merit services. As percentage of Net State Domestic Product[26] (Table 5.2), subsidy to Social Services was 0.84 per cent, while the subsidy to Economic Services was 3.83 per cent, in 2003-04. Over the four time points the share of implicit subsidy in NSDP has risen from 4.25 per cent in 1989-90 to 4.68 per cent in 2003-04. The share of Social Services subsidy in total implicit subsidy as well as in NSDP has fallen, while that of Economic Services has risen.

Table 5.2: New Estimates - Share of Implicit Subsidy in NSDP*

(per cent)

	2003-04	1998-99	1995-96	1989-90
Total subsidy	4.68	4.73	6.03	4.25
Subsidy to Social Services	0.84	0.99	1.28	0.97
Subsidy to Economic Services	3.83	3.74	4.75	3.28

*Note: Subsidy excludes Merit services

Examination of recovery rate[27] shows a decline in total recovery rate over time (Table 5.3). In 2003-04 the overall recovery rate was only 5.02 per cent i.e. only 5.02 per cent of total cost was recovered through revenue receipts, interest and dividends. This also indicates an overall subsidy rate[28] of 94.98 per cent i.e. 94.98 per cent of total cost was subsidised. The recovery rates of both Social and Economic Services have fallen. In 1989-90 the recovery rate of Social Services was 6.64 per cent. This declined to 2.84 per cent in 1998-99 and again increased to 4.53 per cent in 2003-04. University and Higher Education declined in recovery rate from 7.66 per cent in 1989-90 to 4.66 per cent in 2003-04. Economic Services also saw a decline in recovery rate from 7.15 per cent in 1989-90 to 5.13 per cent in 2003-04. Only Agriculture & Allied Activities among the Economic Services registered an increase in recovery rate.

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[26] Net State Domestic Product at Factor cost at current prices (base: 1993-94), Source: Reserve Bank of India, Handbook of Statistics on Indian Economy.

[27] Recovery rate $= \left(\dfrac{\text{Total recovery}}{\text{Total cost}} \right) \times 100$

[28] Recovery rate + Subsidy rate = 1

Table 5.3: Recovery Rates from Various Government Services

(Per cent)

	2003-04	1998-99	1995-96	1989-90
Social Services	**4.53**	**2.84**	**4.19**	**6.64**
University & Higher Education	4.66	2.50	3.55	7.66
Housing & Urban Development	4.02	3.28	14.07	6.88
Economic Services	**5.13**	**6.79**	**6.09**	**7.15**
Agriculture (excluding Forestry)	12.93	11.81	8.43	8.79
Irrigation & flood control	1.29	1.46	0.84	3.46
Energy	0.97	0.79	5.40	0.01
Industry & minerals	9.48	10.49	11.65	5.01
Transport	3.12	4.67	5.66	8.99
Science, Tech & Environment	0.69	1.99	2.66	12.78
Total Subsidy	**5.02**	**5.99**	**5.69**	**7.04**

The Tables A.5.4 and A.5.5 in Appendix give the details of uncovered cost of Social and Economic Services and various sub-heads. Within Social Services, Education was the sector with the highest uncovered cost of Rs. 3051.33 crore in 2003-04 accounting for 59.49 per cent of uncovered cost of Social Services and 34.26 per cent of total uncovered cost. The sub-heads under Education are elementary education, secondary education, university & higher education, sports, education, art & culture. All these heads except university and higher education are Merit services with high levels of externalities. Hence the uncovered cost of university and higher education alone should be considered as implicit subsidy. The Table 5.4 disaggregates the uncovered cost of Education into its main components – Elementary & Secondary Education and University & Higher Education. The share of Elementary & Secondary Education was stable at 76 per cent in the decade ending 2003-04. The implicit subsidy to University & Higher Education is less than 16 per cent, the remaining going to other sub heads such as Sports, Art and Culture.

Table 5.4: Uncovered Cost of Education

(Rs. Crore)

Heads	2003-04	1998-99	1995-96	1989-90
Education	3051.33	1970.30	1437.56	606.77
Elementary & Secondary Education	2324.83 (76.19)*	1497.86 (76.02)*	1102.71 (76.70)*	496.79 (81.87)*
University & Higher Education	484.47 (15.88)*	306.09 (15.54)*	218.22 (15.18)*	75.98 (12.52)*

*Percentage share of Education

Other Social Services like Medical and Public Health, Family Welfare, Water Supply and Sanitation, and Housing and Urban Development also saw substantial increase of uncovered cost in absolute terms (Appendix Table: A.5.4). Medical and Public Health had the most increase from Rs. 138 crore in 1989-90 to Rs. 734 crore in 2003-04, although its share of uncovered cost in the total and in Social Services is much smaller than that of Education. Breaking up total cost into revenue expenditure component and fixed cost component is revealing. The Table 5.5 shows that for Social Services as whole, revenue expenditure was 95 per cent of total cost in 2003-04. Human resources based services such as Labour and Labour Welfare, Social Welfare and Nutrition, and Education have almost the entire cost accounted for by revenue expenditure. Some of the capital intensive services such as Water Supply and Sanitation, Housing and Urban Development have relatively higher share of cost taken up by capital.

The Appendix Table A.5. indicates the implicit subsidy going to Economic Services. Among Economic Services the highest subsidy sectors in 2003-04 were Transport with Rs. 775.72 crore and Rural Development with Rs. 773.82 crore. These are also the sectors that saw the most increase in absolute terms. Subsidy to all sub-heads has increased over the points of reference. Agriculture and Allied Activities, which is a very diversified sub-head, saw an increase of Rs. 400 crore in subsidy from 1989-90 to 2003-04. It includes among others, activities such as crop husbandry, animal husbandry, dairy development, fisheries, forestry and wildlife. Much of the expenditure under these sub-heads is in the form of 'development assistance.' The only service head that shows negative subsidy is Forestry and Wildlife, a Merit Service, implying that this is a revenue generating service. Break up of total cost into revenue expenditure and capital cost components reveals that in 2003-04 for Economic Services as a whole 69.10 per cent of total cost was consumed by revenue expenditure (Table 5.5). For some service heads such as Science, Technology and Environment, and Rural Development, revenue expenditure is 100 per cent of cost.

Table 5.5: Cost Components of Social and Economic Services (2003-04)

	Total Cost (Rs. Crore)	Revenue Expenditure (%)	Capital Cost (%)
Social Services	52611161.05	95.31	4.69
Education	31332313.14	98.30	1.70
• Elementary	12909352.08	99.52	0.48
• Secondary	10739403.43	99.08	0.92
• University & Higher	5081532.10	98.64	1.36
Medical & Public Health	7617163.53	94.49	5.51
Family Welfare	1252993.59	89.35	10.65
Water Supply & Sanitation	3245218.08	70.97	29.03
Housing & Urban Development	1880532.42	89.78	10.22
Information & Broadcasting	109205.06	99.60	0.40
Welfare of SC, ST and OBCs	2524099.16	91.12	8.88
Labour & Labour Welfare	913739.00	100.00	0.00
Social Welfare & Nutrition	3731470.20	99.46	0.54
Economic Services	41273003.52	69.10	30.90
Agriculture and Allied Activities	7853347.68	82.38	17.62
• Crop husbandry	1801655.79	95.79	4.21
• Animal husbandry	1018788.29	95.25	4.75
• Dairy development	165586.58	87.42	12.58
• Fisheries	828405.84	45.82	54.18
• Forestry and wildlife	1644383.27	'90.38	9.62
Rural Development	7742687.75	99.94	0.06
Irrigation & flood control	5882872.99	30.55	69.45
Energy	7220057.40	80.04	19.96
Industry & minerals	4187196.34	45.79	54.21
Transport	8007221.35	55.43	44.57
Science, Tech & Environment	379620.00	100.00	0.00

5.II.2 Comparison with Previous Studies

The frameworks developed by two previous studies have been used here for comparative analysis. The first, Srivastava and Sen (1997) defined implicit subsidy as follows:

$$S_j = RX_j + (d^* + g) K_j + g (Z_j + L_j) - (RR_j + I_j + D_j)$$

Where, S_j = Subsidy to sector 'j'

RX = Revenue expenditure net of intra and inter governmental transfers (includes transfers to individuals and co-operatives

K = Book value of capital stock at beginning of the year

Z = Sum of equity investments in public enterprises and co-operatives at the beginning of the year

L = Sum of loans advanced to public enterprises and co-operatives at beginning of the period.

RR = (Non-tax) revenue receipts from the good or service category

I = Interest receipts from public enterprises and co-operatives

D = Dividends from public enterprises and co-operatives

d = Real depreciation rate[29]

p = Inflation rate[30]

d^* = Nominal depreciation rate = $(d + p)$

g = Average interest rate on internal and external debt incurred by the government

Anand and Jha (2005) modified the above framework and defined subsidy as follows:

$$S_j = RX_j + (d.p.a) K_j + i (Z_j + L_j) - (RR_j + I_j + D_j)$$

Where, a = proportion of capital expenditure that has produced revenue yielding assets (assumed as 50 per cent by them)[31]

i = average interest rate on saving deposits in banks

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[29] Real depreciation rate (d) assumed at 2% for all service heads for all years
[30] The inflation rate used here is the GDP deflator for India
[31] Subsidy according to Anand and Jha framework was estimated with (a = 0.5) and without (a = 1) this assumption. It was found that for services with high capital content the difference in estimates was significant.

The framework for New Estimates using the refined methodology is given below.

$$IS_j = RX_j + d \cdot Kr_j + i \cdot (Z_j + L_j) - (RR_j + I_j + D_j)$$

Where, IS = Implicit subsidy

RX = Revenue expenditure

$d.Kr$ = Depreciation cost

d = Depreciation rate

Kr = Capital stock in the beginning of the year at replacement cost

$i.(Z + L)$ = Opportunity cost of government investment

i = Interest rate that reflects the opportunity cost of government investment

Z = Equity or investments in PSEs and co-operatives at beginning of period

L = Loans to PSEs and other institutions at the beginning of the period

RR = Non-tax revenue receipts

I = Interest receipts on loans

D = Dividend receipts from equity investments

Srivastava and Sen (1997), and Anand and Jha (2004) frameworks have already been examined in chapter 4 and the methodology for arriving at New Estimates was explained in section I of this chapter. Here we proceed with the estimation of implicit subsidy using Srivastava and Sen (1997), and Anand and Jha (2004) frameworks. We have tried to use the same variables as defined in these earlier studies, however in cases where this was not possible we have tried to use as close an approximation as possible. The GDP deflator for India has been used as proxy for inflation rate. For interest rate, Srivastava and Sen (1997) use the average interest rate on internal and external debt incurred by the government[32]. Here we have used the average yield of Government of India securities in the short term (1 to 5 years), medium term (5 to 15 years), and long term (15 years and above). The source of data is Handbook of Statistics on Indian Economy, Table 70: Structure of interest rates (Reserve Bank of India). Anand and Jha (2004) have used an average interest rate on saving deposits in banks. Here we have taken the simple average of deposit rates[33] for three periods (1 to 3 years, between 3 to 5 years, and above 5 years) from Handbook of Statistics on Indian Economy, Table 70: Structure of interest rates (Reserve Bank of India). These

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[32] "It (The interest rate) is estimated as the average rate of interest on internal (including small savings and provident fund) and external debt incurred by the government" (Srivastava and Sen (1997)). There is no explanation about the sources of external debt and also the weights given to internal and external debt components. This requires us to make an approximation.

[33] The deposit rates refer to those in five major public sector banks as at end-March of the reference year.

two estimates have been called 'S&S estimates' and 'A&J estimates' for Srivastava and Sen, and for Anand and Jha respectively.

Graph 5.1: Total Subsidy (2003-04) - Comparison
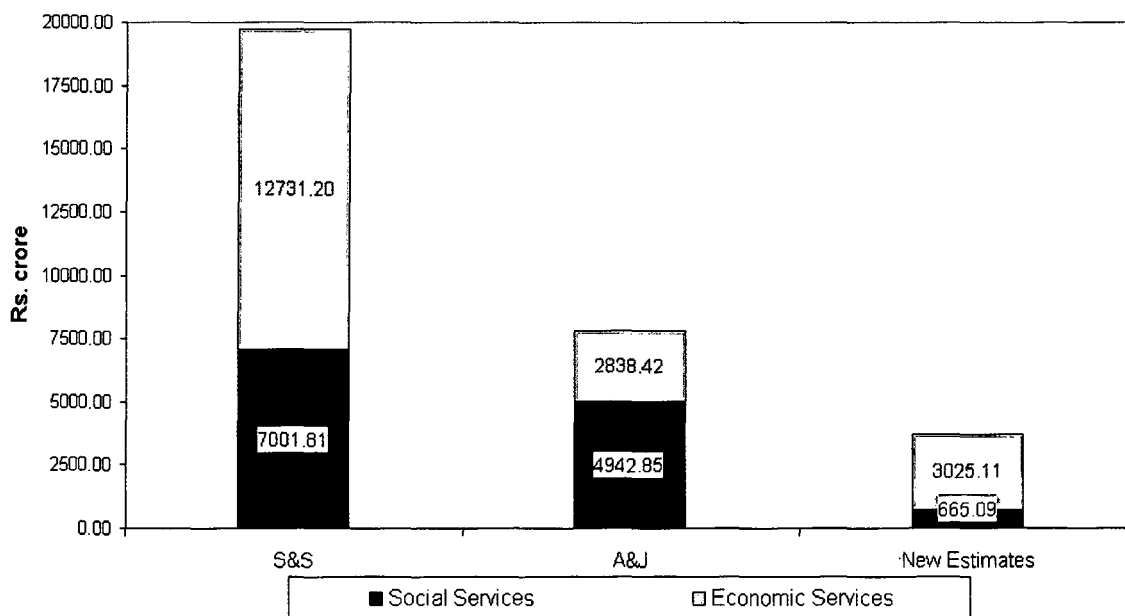
S&S = Srivastava and Sen estimate

A&J = Anand and Jha estimate

The results for 2003-04 are shown in the Graph 5.1. Total subsidy as estimated by S&S framework is Rs. 19,733 crore. This is much more than what has been estimated by A&J framework and by the refined methodology (New Estimates). A&J estimate for 2003-04 is Rs. 7,781.26 crore, while the New Estimate is Rs. 3,690.20 crore. There is a difference of Rs. 16,042.80 crore between S&S estimate and the New Estimate. Decomposition of Total subsidy into Social and Economic Services shows that the divergence is on account of both Social and Economic Services. According to S&S framework the subsidy to Social Services is Rs. 7,001.81 crore in 2003-04 as against A&J estimate of Rs. 4,942.85 crore and New Estimate of Rs. 665.09 crore. Subsidy to Economic Services was Rs. 12,731.20 crore according to S&S framework as against A&J estimate of Rs. 2,838.42 crore and New Estimate of Rs. 3,025.11 crore.

The difference in these estimates arises from two sources. In case of Social Services, New Estimates excluded Merit services from the purview of subsidy. The quantum of subsidy to Social Services is small due to definitional reasons, as most services under Social Services head are Merit services. In the case of Economic Services the difference in estimates arises because of specification of the variable 'fixed cost' or 'cost of capital'. In S&S framework the parameter of fixed cost are additive factors. The fixed cost is the sum of cost components, one of them being the depreciation cost i.e. the product of the parameter (sum of real depreciation rate, inflation rate and interest rate) and capital stock at the beginning of the year. In A&J framework the parameter of depreciation cost is a multiplicative factor. The depreciation cost is the product of the parameter (product of real depreciation rate, inflation rate and proportion of capital generating revenue yielding assets) and capital stock at the beginning of the year. The different rates being decimals their sum is of greater magnitude than their product. This makes the S&S estimates much larger. A&J framework and New Estimates framework both have parameters that are multiplicative factors. The difference between A&J estimates and the New Estimates arises in the value of capital that is used. A&J framework values capital differently, taking the capital stock at the beginning of the year as given. The New Estimates framework revalues the capital stock taking into consideration vintage, price of capital and the growth of investment. So the value of capital in the New Estimates is higher than the entry in the Finance Accounts. This makes the New Estimates of subsidy for Economic Services greater than A&J estimates.

Graph 5.2: Total Subsidy - Divergence over time
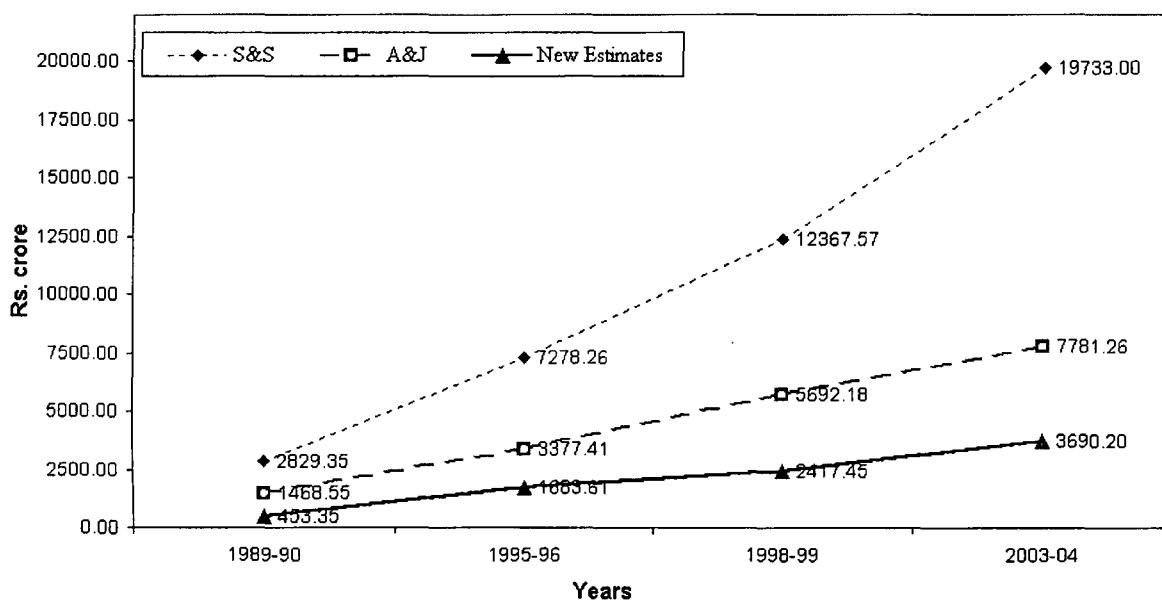
S&S = Srivastava and Sen estimate; A&J = Anand and Jha estimate

Examination of estimates over four time points reveals the gap increasing over time (Graph: 5.2). The widening gap is prominent between the additive specification and the multiplicative specifications. The source of this divergence is almost entirely the subsidy to Economic Services. As mentioned in section I, more than 90 per cent of cost of Social Services is the revenue expenditure, while for the Economic Services the cost is more evenly divided between revenue expenditure and capital cost. Moreover the adjustment with parameters is in the fixed cost (capital) component. So the divergence between estimates is more on subsidy to Economic Services because these services have greater proportion of capital.

Among Economic Services estimates for Transport and Irrigation show widening gap over the time points (Appendix: Graph A.5.1). This divergence arises from difference in the value of capital stock. For both these services the loan and equity component of cost is small or nil. The fixed cost is almost entirely made up of depreciation cost. These services provided directly through government departments have heavy investment in physical capital. So the valuation of capital becomes crucial while estimating subsidy. Estimates for Energy, Rural Development, and Science, Technology and Environment almost coincide. Science, Technology and Environment has no fixed cost for any year. The total cost comprises entirely of revenue expenditure; thereby making the three estimates equal. In case of Energy, the loan and equity component is very similar for all three estimates for all years. The depreciation cost is zero for the first two years, and in the later two years there is a difference of about Rs. 1 crore between S&S and A&J estimate of depreciation cost, which is entirely due to the specification of the variable 'depreciation cost.' Similarly Rural Development has zero loan component, the subsidy estimates are very close because of the small difference in depreciation cost.

In case of Social Services all three estimates are similar for all years for those service heads that have only revenue expenditure in their cost. These services are Information and Broadcasting, Labour and Labour Welfare, Welfare of SCs, STs and OBCs, and Social Welfare and Nutrition. Housing and Urban Development, Family Welfare, and Medical and Public Health, which have some capital component, show divergent values of estimates of subsidy (Appendix: Graph A.5.1).

Thus it is obvious that the estimates differ for those service heads that have high capital component, whether they are Social Services or Economic Services.

5.II.3 Sensitivity Analysis

From the previous section it is evident that the estimates of subsidy are divergent for services that have high capital content. The three frameworks value capital differently and services that have greater fixed cost component have estimates of subsidy that are very different. One reason for difference in estimates is the manner in which capital is valued. Another factor affecting the estimates could be the definition of parameters. This section examines the robustness of the New Estimates with respect to choice of parameters.

Two parameters used to arrive at New Estimates are the lifetime of assets and the opportunity cost of government investment or the interest rate. The lifetime of assets has been assumed as 25 years because 50 years assumed by other studies was thought to be too broad an assumption. Absence of a longer series of data on capital stock prevents us from testing this assumption. Hence we retain this assumption and test robustness with respect to the other parameter interest rate. New Estimates have used the effective interest rate on government debt, which is the ratio of interest payment to stock of debt. Other studies have used different interest rates; for instance Srivastava and Sen (1997) used the average interest rate on internal and external debt incurred by the government, and Anand and Jha (2004) used the average interest rate on saving deposits in banks. We test whether the New Estimates differ when different interest rates are used. We use 1 per cent of the New Estimate to define the confidence interval. If the estimates using other interest rates lie within the confidence interval, then we can say that the New Estimate is robust, implying that the choice of interest rate does not affect the reliability of estimates. The 1 per cent confidence interval may be too strong a condition, which may be relaxed if it is not met.

We have re-estimated New Estimates of subsidy using two different interest rates – the average yield on Government of India securities (used to arrive at S&S estimate) and the average deposit rate (used to arrive at A&J estimate). We test for robustness in all four time points (1989-90, 1995-96, 1999-2000 and 2003-04).

The estimates of total subsidy using average deposit rate (i) and average yield on Government of India securities (g) both lie outside the 1 per cent confidence interval for 2003-04 (Appendix: Table A.5.1). For the same year both estimates of Economic Services Subsidy also lie outside the confidence interval. For 1995-96 the estimates of total subsidy and Economic Services subsidy using average deposit rate (i) is outside the confidence interval, and for 1989-90 these estimates using average yield on Government of India securities (g) also lie outside the confidence interval.

When the confidence interval is relaxed to 5 per cent it is found that for 2003-04 estimates of Economic Services subsidy using 'i' and 'g' lie beyond the limits (Appendix: Table A.5.2). In 1989-90 the estimate of Economic Services subsidy using 'g' also lies outside the confidence interval.

The interest rate is used to arrive at the opportunity cost of government's financial investment (in the form of loans and equity). Since some estimates do lie beyond the confidence limits even after widening the interval to 5 per cent, we may infer that the estimates are sensitive to the parameter used.

An assumption of Anand and Jha (2004) is that only 50 per cent of capital stock in any sector produces revenue yielding assets. The New Estimates were calculated without this assumption. We now test if making this assumption significantly changes the estimates. For this purpose we redefined depreciation cost as '$d.a.Kr$' (d = real depreciation rate, a = 0.5 i.e. proportion of capital stock generating revenue yielding assets, Kr = capital at replacement cost). We defined confidence intervals at 10 per cent, 5 per cent and 1 per cent of the New Estimates. We found that at 10 per cent confidence limits the New Estimates are not significantly different when this assumption was included, except in 1998-99 for Economic Services, when it is significant (Appendix: Table A.5.3). When the confidence interval is narrowed to 5 per cent, Economic Services Subsidy is significant for the first three time points (2003-04, 1998-99 and 1995-96).

The assumption of 50 per cent capital stock generating revenue yielding assets is relevant for Economic Services because these service heads have relatively greater proportion of capital investment by the government. Among Economic Services it is Industry and Minerals, Transport and Irrigation whose subsidy estimates are significant. Obviously these services have high capital content making this assumption highly relevant for them. Of course the proportion of capital that is in operation and generating revenue yielding assets cannot be conclusively set as 50 per cent across the board. It must vary from service to service.

5.III Chapter Summary

This chapter offers a refined methodology to estimate implicit subsidy. One mode of refinement is in the definition of what constitutes a subsidy. The uncovered cost of only Non-merit services is regarded as implicit subsidy. Merit services, which have features of public good, are thus excluded from the purview of subsidy. The other mode of refinement in methodology is the revaluation of capital stock in historic prices to replacement cost values, making the application of real depreciation rate possible.

Implicit subsidy is estimated for the special case of Kerala using the refined methodology for four time points – 1989-90, 1995-96, 1998-99 and 2003-04.

Considering only Non-merit services, of the total implicit subsidy of Rs. 3,690.20 crore in 2003-04, 18.02 per cent went to Social Services and the remaining went to Economic Services. Total implicit subsidy was 4.68 per cent of Net State Domestic Product and 66.62 per cent of Gross Fiscal Deficit in 2003-04. The share of Social Services subsidy in total implicit subsidy as well as in NSDP has fallen, while that of Economic Services has risen.

The overall recovery rate has declined for the period of analysis. The total recovery rate of 7.04 per cent in 1989-90 declined to 5.02 per cent in 2003-04. The recovery rates of both Social and Economic Services have declined.

Under Social Services, Education is the head with the highest uncovered cost. The uncovered cost of Elementary & Secondary Education remained stable at 76 per cent of uncovered cost of Education for the decade ending 2003-04. Subsidy to University & Higher Education is less than 16 per cent. 95 per cent of implicit subsidy to Social Services goes into revenue expenditure. Transport and Rural Development are the major subsidy heads under Economic Services. The recovery rate for all heads under Economic Services have declined except for Agriculture and Allied Activities. For Economic Services 69 per cent of implicit subsidy is accounted for by revenue expenditure.

Estimates of subsidy have been calculated using frameworks developed by Srivastava and Sen (1997) and Anand and Jha (2004) for the same four time points and compared with the New Estimates. The results show that Srivastava and Sen (S&S) estimate of total subsidy in 2003-04 is Rs. 19,733 crore, while Anand and Jha (A&J) is only Rs. 7,781.26 crore and the New Estimates give Rs. 3,690.20 crore.

The difference in estimates arises from the definition of which services come under the purview of subsidy and in the specification of the variable 'fixed cost'. S&S is an additive framework where depreciation cost is the product of the parameter and the variable capital stock at the beginning of the year. The parameter of depreciation cost is the sum of real depreciation rate, inflation rate and interest rate. A&J and New Estimates have a multiplicative framework. In A&J the parameter of depreciation cost is the product of real depreciation rate, inflation rate and proportion of capital generating revenue yielding assets. In the New Estimates framework the parameter of depreciation cost is the real depreciation rate, but the variable capital stock is expressed in replacement cost values to take care of vintage and inflation rate.

The estimates of subsidy differ particularly for Economic Services because these services have a high proportion of capital cost. Since the adjustment with parameters is in the fixed cost (capital) component, the valuation of capital becomes crucial while estimating subsidy. The divergence of estimates is evident for services that have high fixed cost component.

The robustness of the parameter 'interest rate' was tested using 5 per cent and 1 per cent of New Estimates as confidence intervals. The interest rate parameter was significant for 2003-04, 1995-96 and for 1989-90 at 1 per cent level. When confidence interval was widened to 5 per cent Economic Services was significant for 2003-04. Since some estimates do lie beyond the confidence limits even after widening the interval to 5 per cent, we may infer that the estimates are sensitive to the parameter used.

The assumption by A&J that only 50 per cent of capital stock in any sector produces revenue yielding assets, was tested for New Estimates. At 5 per cent, Economic Services Subsidy was found to be significant for the first three time points (2003-04, 1998-99 and 1995-96). Such an assumption is relevant for Economic Services because they have relatively greater proportion of capital investment. Among Economic Services, subsidy estimates for Industry and Minerals, Transport and Irrigation were found to be significant. Obviously these services have high capital content making this assumption highly relevant for them. Of course the proportion of capital that is in operation and generating revenue yielding assets as 50 per cent is only an assumption and may not hold true. It must vary from service to service.

Appendix to Chapter 5

TABLES

Table A.5.1 Sensitivity Test for Interest Rates - 1 % confidence level

	1 % Confidence Interval		i *	g #	
	Lower Limit	Upper Limit			
2003-04	8815.89	8993.99	8624.11	8652.01	Total Subsidy
1998-99	6305.90	6433.29	6348.02	6355.22	
1995-96	3764.08	3840.12	3853.11	3810.31	
1989-90	1462.81	1492.37	1489.20	1509.32	
2003-04	5077.47	5180.04	5088.10	5092.14	Social Services Subsidy
1998-99	3441.63	3511.16	3473.40	3474.40	
1995-96	2331.18	2378.28	2361.94	2355.89	
1989-90	1057.26	1078.62	1069.14	1071.23	
2003-04	3738.42	3813.95	3536.01	3559.87	Economic Services Subsidy
1998-99	2864.27	2922.13	2874.62	2880.82	
1995-96	1432.90	1461.84	1491.17	1454.42	
1989-90	405.55	413.75	420.06	438.10	

Note: * New Estimates using average deposit rate
New Estimates using average yield on Government of India securities
Estimates in bold indicate that they lie outside the confidence interval

Table A.5.2 Sensitivity test for interest rates - 5 % level of confidence

	5 % Confidence Interval		i *	g #	
	Lower Limit	Upper Limit			
2003-04	8459.69	9350.19	8624.11	8652.01	Total Subsidy
1998-99	6051.12	6688.08	6348.02	6355.22	
1995-96	3612.00	3992.21	3853.11	3810.31	
1989-90	1403.71	1551.47	1489.20	1509.32	
2003-04	4872.32	5385.19	5088.10	5092.14	Social Services Subsidy
1998-99	3302.58	3650.22	3473.40	3474.40	
1995-96	2236.99	2472.47	2361.94	2355.89	
1989-90	1014.54	1121.34	1069.14	1071.23	
2003-04	3587.38	3964.99	3536.01	3559.87	Economic Services Subsidy
1998-99	2748.54	3037.86	2874.62	2880.82	
1995-96	1375.00	1519.74	1491.17	1454.42	
1989-90	389.17	430.13	420.06	438.10	

Note: * New Estimates using average deposit rate
New Estimates using average yield on Government of India securities

Table A.5.3 Sensitivity Test for Proportion of Assets Yielding Capital Stock

	1 % Confidence Interval	5 % Confidence Interval	10 % Confidence Interval	
2003-04	S*	S	N S	Total Subsidy
1998-99	S	S	N S	
1995-96	S	S	N S	
1989-90	S	N S	N S	
2003-04	S	N S	N S	Social Services Subsidy
1998-99	S	N S	N S	
1995-96	S	N S	N S	
1989-90	N S	N S	N S	
2003-04	S	S	N S	Economic Services Subsidy
1998-99	S	S	S	
1995-96	S	S	N S	
1989-90	S	N S	N S	

* S = Significantly different from New Estimate
N S = Not significant

Table A.5.4 Uncovered Cost of Social Services and sub-heads

(Rs. Crore)

Heads	2003-04	1998-99	1995-96	1989-90
Social Services	5128.76	3476.40	2354.73	1067.94
Social Services share in total subsidy (%)	57.59	54.58	61.93	72.28
Education	3051.33	1970.30	1437.56	606.77
• Elementary	1289.96	909.78	677.04	323.86
• Secondary	1034.87	588.09	425.67	172.92
• University & Higher	484.47	306.09	218.22	75.98
Medical & Public Health	734.10	470.08	330.09	137.93
Family Welfare	125.24	94.22	72.27	36.24
Water Supply & Sanitation	321.78	232.83	77.53	69.47
Housing & Urban Development	180.50	200.19	45.33	14.00
Information & Broadcasting	10.80	8.39	7.48	3.14
Welfare of SC, ST and OBCs	246.36	217.83	83.93	45.42
Labour & Labour Welfare	87.17	54.65	50.52	33.12
Social Welfare & Nutrition	371.36	228.61	156.49	108.08

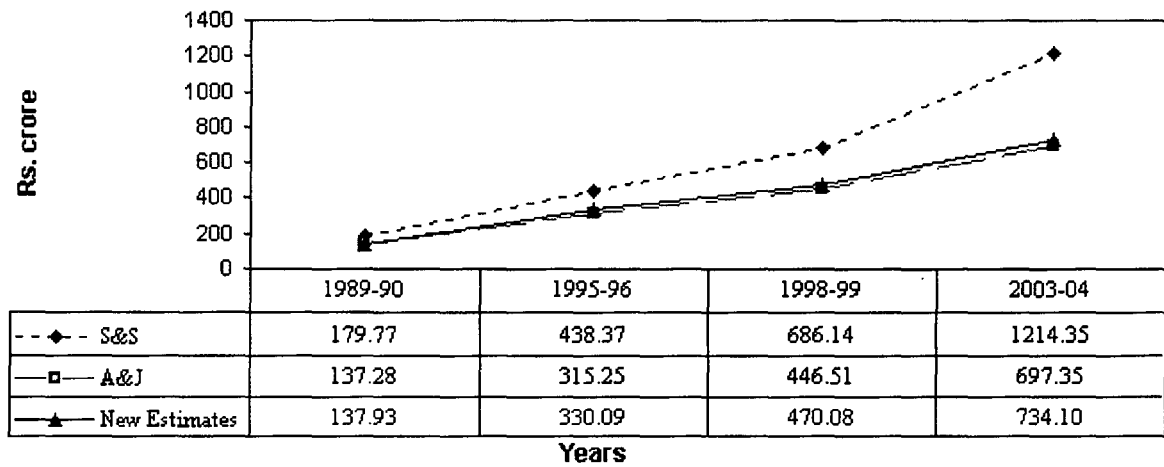## Table A.5.5 Uncovered Cost of Economic Services and sub-heads

(Rs. Crore)

Heads	2003-04	1998-99	1995-96	1989-90
Economic Services	3776.19	2893.20	1447.37	409.65
Economic Services share in total subsidy (%)	42.41	45.42	38.07	27.72
Agriculture and Allied Activities	517.88	572.45	304.52	110.51
• Crop husbandry	157.46	163.29	185.62	41.94
• Animal husbandry	95.57	71.08	45.90	16.48
• Dairy development	15.34	17.28	16.97	5.30
• Fisheries	73.96	73.71	49.30	10.92
• Forestry and wildlife	-22.75	-6.68	-84.34	-6.00
Rural Development	773.82	988.00	205.17	66.04
Irrigation & flood control	580.68	484.80	366.95	68.68
Energy	714.99	141.79	72.46	27.76
Industry & minerals	379.03	265.06	167.93	56.54
Transport	775.72	427.94	277.76	62.36
Science, Tech & Environment	37.70	14.21	7.05	1.84
Total subsidy (Social + Economic)	8904.94	6369.60	3802.10	1477.59

GRAPHS

Graph A.5.1: Subsidy Estimates – Divergence over time

Education

	1989-90	1995-96	1998-99	2003-04
- - ◆ - - S&S	660.79	1644.48	2354.82	3637.27
——□—— A&J	606.01	1409.41	1928.25	3005.50
——▲—— New Estimates	606.77	1437.56	1970.30	3051.33

Years

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Medical and Public Health

	1989-90	1995-96	1998-99	2003-04
- - ◆ - - S&S	179.77	438.37	686.14	1214.35
─ ▫ ─ A&J	137.28	315.25	446.51	697.35
─ ▲ ─ New Estimates	137.93	330.09	470.08	734.10

Years

Family Welfare

	1989-90	1995-96	1998-99	2003-04
- - ◆ - - S&S	179.77	438.37	686.14	1214.35
─ ▫ ─ A&J	137.28	315.25	446.51	697.35
─ ▲ ─ New Estimates	137.93	330.09	470.08	734.10

Years

Housing & Urban Development

	1989-90	1995-96	1998-99	2003-04
- - ◆ - - S&S	47.94	110.33	314.91	338.32
─ ▫ ─ A&J	13.51	36.59	187.47	165.64
─ ▲ ─ New Estimates	14.00	45.33	200.19	180.50

Years

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Agriculture and Allied Activities

	1989-90	1995-96	1998-99	2003-04
- - ♦ - - S&S	135.29	467.31	635.03	1052.22
—■— A&J	112.16	291.35	561.86	430.04
—▲— New Estimates	110.51	304.52	572.45	517.88

Years

Energy

	1989-90	1995-96	1998-99	2003-04
- - ♦ - - S&S	37.06	74.80	138.71	651.89
—□— A&J	31.16	86.99	135.55	643.17
—▲— New Estimates	27.76	72.46	141.79	714.99

Years

Irrigation

	1989-90	1995-96	1998-99	2003-04
- - ♦ - - S&S	735.42	2048.79	3373.54	5306.10
—□— A&J	58.25	136.25	169.69	221.25
—▲— New Estimates	68.68	366.95	484.80	580.68

Years

Industry and Minerals

Years	1989-90	1995-96	1998-99	2003-04
- - ◆ - - S&S	80.07	211.87	384.72	490.99
—◻— A&J	60.45	178.70	243.99	259.22
—▲— New Estimates	56.54	167.93	265.06	379.03

Transport

Years	1989-90	1995-96	1998-99	2003-04
- - ◆ - - S&S	328.83	1117.67	2160.57	4417.00
—◻— A&J	59.09	166.49	237.37	477.23
—▲— New Estimates	62.36	277.76	427.94	775.72

CHAPTER 6

SUMMARY AND CONCLUSION

The increasing attention that the poor fiscal performance, at national and sub-national levels of governments, is receiving motivated us to study the measurement of subsidies. The quantum of subsidy deserves serious consideration while studying the fiscal performance of a government. For, subsidy is a variable affecting both revenue and expenditure sides of government budget. As emphasised by various Finance Commissions, subsidy, in both explicit and implicit forms, is one of the variables to be addressed in order to correct the fiscal imbalance of States. The central concern of our study, however, is not so much on analysing implications of subsidy on fiscal imbalance as it is on the methodological issue of how subsidy, in both explicit and explicit forms, is measured.

The significance of going into the question of the measurement of subsidy arises from the fact that its quantum, as indicated in the budget, gives an underestimated picture for two reasons. One, the definition of explicit subsidy in the budget is narrow as it limits the scope of subsidy to government administrative departments alone and leaves out the huge resource flow to public sector. As the resource flow to the public sector does not get accounted for as 'subsidy' in the budget, there is logic in arguing that explicit budgetary subsidy is underestimated. Two, the budget does not account correctly the implicit subsidy, which as the name suggests, is an estimate of the uncovered cost of government services. There are, however, several methodological issues to be addressed while measuring implicit subsidy. Therefore, the study has examined the question of measurement of subsidy in the context of fiscal imbalance in Kerala. It has dealt with the specific objectives of (1) sketching the fiscal imbalance of Kerala and tracing the role of subsidy there on, (2) estimating power sector subsidy as a part of explicit subsidy, (3) offering a critique of the available estimates of implicit subsidy and (4) suggesting a major methodological improvement in arriving at implicit subsidy estimates. The main findings of the analysis carried out to meet the above objectives of the study in different chapters are summarised below and the policy relevance is indicated as conclusion.

6.1 Subsidy and Fiscal Imbalance in Kerala

The study has highlighted some interesting facets of the fiscal performance of Kerala. The fiscal imbalance is led by revenue deficit, which constituted 81 per cent of Gross Fiscal Deficit in 2003-04. The performance on both revenue and expenditure sides leaves much to be desired. On the revenue side, own taxes have contributed increasingly to the State's total revenue. However, declining share of non-tax receipts in total revenue has offset the good performance of own taxes. On the expenditure side, non-developmental and committed expenditure, which are inflexible downward by their very nature, have contributed to the overall deficit situation. In particular, salaries, wages, pension and interest contribute 70 per cent of revenue expenditure. In addition to these, subsidies form another source of drain on the State's resources. The magnitude of subsidy in the budget appears negligible because of incomplete definition. A wider definition of subsidy implies that the contribution of subsidy on fiscal imbalance of the State is greater than what is commonly perceived.

6.2 Explicit Subsidy in the Budget of Kerala

An examination of the explicit subsidy situation in India and more particularly in the case of Kerala has revealed that the amount of subsidy given by the State government appears small, but this is so because it is narrowly defined. When we identify subsidy received by particular State enterprises from their books of account, it is found that the subsidy in the State budget is greatly under reported. For example, an examination of the Annual Report of Kerala State Electricity Board (KSEB) has shown that the quantum of subsidies and grants received by it from the State government is high and accounted for 27 per cent of total income of KSEB in 2002-03. KSEB received Rs. 1,015.22 crores from the State government in the form of subsidy in 2002-03. As against this the total budgetary subsidy of the State government was only Rs. 152.23 crores in the same year. Subsidy is also used as a tool to cover the losses of State enterprises. Losses that are left uncovered by subsidy are financed by loans from financial institutions and are guaranteed by the State government. Thus not only subsidy, but also public sector debt can have a significant impact on the State's finances.

6.3 Revisiting the Methodology to Estimate Implicit Subsidy

The cost recovery framework is used by major studies to estimate implicit subsidy. This framework conceptualises implicit subsidy as the excess of cost of delivering a service over recoveries from it. We argue that the nomenclature of 'un-recovered' cost is faulty; instead the excess cost must be termed as 'uncovered' cost.

The refinements of methodology that we suggest are of two kinds. One form of refinement is in the definition of what constitutes a subsidy. Merit services, due to externalities associated with them, must be publicly provided. The uncovered cost of Merit services hence does not qualify as implicit subsidy. The uncovered costs of Non-merit services alone are considered as implicit subsidy. Apart from the definitional problem, the crucial methodological question that we address is the measurement of depreciation cost of capital while estimating the implicit subsidy. We are of the opinion that the methods adopted by earlier studies by and large do not capture correctly the value of capital. We revalue the capital stock given in historic prices in the budget into replacement cost values to make possible the application of a real rate of depreciation.

Estimation of implicit subsidy using the refined methodology suggests that the quantum of implicit subsidy is much smaller than what earlier studies have estimated. Considering only non-merit services, Social Services accounted for 18 per cent of the total implicit subsidy of Rs. 3,690.20 crores and the remaining went to Economic Services in 2003-04. Total implicit subsidy was 4.68 per cent of Net State Domestic Product and 66.62 per cent of Gross Fiscal Deficit in 2003-04. The total recovery rate of 7.04 per cent in 1989-90 declined to 5.02 per cent in 2003-04. The recovery rates of both Social and Economic Services have declined.

Our estimates using the refined methodology are different from the earlier ones for many reasons. To illustrate, when we consider only non-merit services in the purview of subsidy its quantum reduced; this is particularly relevant for Social Services. Most of the sub-heads under Social Services are Merit services with high levels of externalities and therefore are excluded from subsidy. The estimates of subsidy to Economic Services are different mainly because of the method of valuing capital. Tests for sensitivity showed that our estimates of implicit subsidy are sensitive to the use of parameters such as interest rate and proportion of capital generating revenue yielding assets.

6.4 Policy Relevance

The general conclusion emerging from the findings of the study is that the quantum of subsidy, whether explicit or implicit, is sensitive firstly to the way it is defined and secondly to the methodology of estimation. In the case of explicit subsidy we find that the narrow definition in the budget leads to large resource flows not being accounted as 'subsidy.' At the same time, attributing subsidy to merit services, as is done by the earlier studies, inflates the quantum of implicit subsidy. Also the refinement in the methodology of estimating implicit subsidy gives results that are

divergent downward from the estimates by earlier studies. Thus, the quantum of subsidy is sensitive to its definition and the methodology of its estimation.

Subsidy is generally considered to be an important variable to be targeted while addressing fiscal imbalance. For a regional economy the poor cost recovery from government services is an area of concern, and policy prescriptions generally advocate pricing government services on market principle leading to the cutting down of subsidies. When the State government is providing most of the welfare enhancing services, cutting subsidies and recovering cost by pricing can have detrimental effect on welfare. This however does not reduce the importance of appropriate pricing mechanism in the delivery of government services. For subsidy to be used as a target variable in addressing fiscal imbalance, its conceptualisation and measurement concerns are as important as pricing and targeting mechanism.

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NOTES

Note 1: Conditions for Debt/GSDP Stabilisation

(Source: Reserve bank of India (2005), "A Study of Debt Sustainability at State Level in India", pages 5 - 8.)

The stock of Public Debt (D) in time 't' is the sum of Gross Fiscal Deficits (GFD) of previous periods. The Fiscal Deficit (F) in turn is the sum of the Primary Deficit (PD) and interest expenditure on the previous period debt. Normalising with respect to Gross State Domestic Product (GSDP) the relation can be expressed as in equation (1).

$$F_t = P_t + i \cdot D_{t-1}$$

$$\frac{F_t}{GSDP_t} = \frac{PD_t}{GSDP_t} + \frac{i \cdot D_{t-1}}{GSDP_t}$$

$$f_t = p_t + \frac{i \cdot D_{t-1}}{GSDP_{t-1}(1+n)}$$

$$f_t = p_t + \frac{i \cdot d_{t-1}}{(1+n)} \tag{1}$$

Where,
i = interest rate on government debt
n = constant growth rate of GSDP

Also given that,

$$d_t = \frac{D_t}{GSDP_t} = \frac{D_{t-1}}{GSDP_{t-1}(1+n)} + f_t \tag{2}$$

Substituting (1) in (2) and rearranging,

$$d_t - d_{t-1} = \left(\frac{D_{t-1}(1+i)}{GSDP_{t-1}(1+n)} \right) - \frac{D_{t-1}}{GSDP_{t-1}} + p_t$$

If primary deficit is zero and i = n, then ($d_t - d_{t-1}$) = 0, and debt will be stabilised. Putting ($d_t - d_{t-1}$) = 0 we get the other conditions as follows:

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If nominal growth rate (n) = interest rate on debt (i) $\Rightarrow$ Primary Deficit = 0

If   n > i $\Rightarrow$ Primary Deficit = positive, Or

If   n < i $\Rightarrow$ Primary Deficit = negative (i.e.) Primary Surplus

If debt is to be stabilised, and 'n = i' then there must be zero primary deficit. If 'n > i' then there should be a primary deficit. If however, 'n < i' then there should be a primary surplus.

The primary balance arises on account of fiscal flows in the current year and does not include expenditure on past debt. If there is primary deficit in a particular year then the debt/GSDP will be higher for that year over the previous year unless the nominal growth rate is greater than interest rate on debt. Also a state will low debt/GSDP ratio will have lower primary surplus requirement.

Note 2: Explicit Subsidy in the Budget

(Source: Government of Kerala (2000) "Economic and Purpose Classification of Kerala Government Budget 1993-94 to 1998-99", Department of Economics and Statistics, pages 6-7.)

The Economic and Purpose Classification reclassifies and interprets the budget into meaningful economic and functional categories. This classification system is based on the system of national accounts recommended by the United Nations or its specialised agencies. The system of national account presents an interlocking system of accounts for the transactions of the whole economy and government accounts appears as one elements of this whole system.

Government transactions have been delineated into a set of three accounts:

Account I – Income and out lay account of administrative departments:

This account deals with current revenue and expenditure of government administrative departments. The total revenue of administrative departments is classified into Income from property and entrepreneurship, Interests, Direct Taxes, Indirect Taxes, Miscellaneous receipts, Revenue grants, Contributions etc. The expenditure side is classified into Compensation of employees, Commodities and Services (consumption expenditure of government), Interest, Subsidies, Current Transfer, and Savings on current account.

Account II – Production Account of Departmental Commercial Undertakings:

Departmental Commercial Undertakings are different from government administrative departments in that they charge what they provide according to use and are thus able to meet most of their costs from their sale proceeds. Independent statutory corporations and boards set up by the state government are excluded from the purview of those commercial undertakings included in this account. In the case of Kerala, the head of accounts classified as departmental commercial undertakings are Irrigation, Road and water transport schemes, Forests, Milk supply schemes, Printing press, Ports and Pilotage.

Account III – Capital Finance Account of State Government:

This account is concerned with the total capital formation by government administration and departmental commercial undertakings together with capital transfer payments which are mostly for assisting capital formation in the rest of the economy.

Subsidies classified on the expenditure side of Account I are defined as follows: "Subsidies include all grants on current account which private industries receive from the government. These may take the form of direct payments to producers or differentials between the buying and selling prices of government trading organisations. Thus subsidies are transfers which in the light of the basis of making the grants, which are additions to the income of the producers from current production. The grants may for example be based on the amount of value of commodities produced, exported or consumed, the labour or land employed in production or the manner in which production is organised and carried on. The value of coupons made available by government agencies to specify groups of the population to enable them to obtain goods at prices lower than the current market prices are classified as current transfer to households. Under certain circumstances subsidies include the grants made by government to public corporations as compensations for loses i.e. negative operating surplus and in connection with the losses of Departmental Commercial Undertakings. This will be in the case when the loss is clearly the consequence of the policy of the government to maintain prices at a level at which the proceeds of the public industry will not cover the current costs of production. Rebate on sale of handloom cloth, loss on the sale of fertilisers, improved seeds, pesticides and agricultural implements, loss suffered by the co-operative societies etc are to be treated as subsidies. In the case of irrigation, the loss by the departmental undertakings is treated as subsidy." (Pages 6-7)

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