# BUDGETARY SUBSIDIES AND THE FISCAL DEFICIT

# Case of Maharashtra

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# Indian Budgetary Subsidies and the Fiscal Deficit

## I. Introduction and Motivation

Srivastava and Sen (1997) have advanced a framework for the study of government subsidies in India.[1] Their approach estimates subsidy as the *un-recovered costs* in the provision of goods and services by the government (see the next section for various definitions of subsidy).[2] Specifically, for the state of Maharashtra, the subsidy[3] was estimated at Rupees 9607.41 Crores (Annexure 15, pg 151, NIPFP report) for the year 1993-94, while the Gross Fiscal Deficit (GFD)[4] for the same year stood at Rupees 2265.3 Crores. As a proportion of Gross State Domestic Product (GSDP), these magnitudes were 8.5 and 2 per cent, respectively. The estimated subsidy constituted about 65 (73) per cent of the total (revenue) expenditure.[5] Contrast this with the budgetary subsidies estimated between 2 and 2.35 per cent of GSDP by the Finance Department of the Government of Maharashtra (GoM) as shown in Table 1.

**Table 1: Subsidies[6] in Maharashtra**

**(Rupees Crore[7])**

| Year | Explicit | Grant-in-Aid | Hidden | Total (2+3+4) | (5) as % of GSDP[8] | (2+4) as % of GSDP |
|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| **1998-99** | 638.53 | 2954.61 | 1259.77 | 4852.91 | 2.32 | 0.91 |
| **1997-98** | 557.69 | 2584.86 | 1271.69 | 4414.24 | 2.28 | 0.95 |
| **1996-97** | 716.28 | 2313.58 | 1095.86 | 4125.72 | 2.34 | 1.03 |
| **1995-96** | 476.13 | 1919.45 | 830.13 | 3225.71 | 2.04 | 0.83 |
| **1994-95** | 458.73 | 1618.69 | 786.16 | 2863.58 | 2.20 | 0.96 |
| **1993-94** | 370.16 | 1519.75 | 691.56 | 2581.47 | 2.28 | 0.94 |

[1] This is henceforth called the NIPFP report.

[2] The subsidy thus measured does not estimate those normally termed as explicit subsidies like food, fertilizer, power etc. but rather the gross subsidies in the economy.

[3] Strictly speaking (and for reasons elucidated later) this is the sum of under-recoveries measured at an opportunity cost (see section 4 for its relevance) and not the aggregate subsidy (see section 2 on the meaning and scope of the term subsidy).

[4] Reserve Bank of India (RBI) (1996), Study of State Government Finances, India.

[5] Using the same methodology, for Maharashtra, the subsidy[5] was estimated at Rupees 18,827.6 Crores for the year 1998-99 [Anand (2000)]. The Gross Fiscal Deficit (GFD) for 1998-99 stood at Rupees 7,462.4 Crores. As a proportion of Gross State Domestic Product (GSDP), these magnitudes were 9 and 3.6 per cent, respectively. The estimated subsidy constituted about 65 (73) per cent of the total (revenue) expenditure.

[6] Subsidies in the Budget of Government of Maharashtra, Finance Department, Government of Maharashtra Various issues.

[7] 1 Crore equals 10 million.

[8] GSDP data used is at current prices (new 1993-94 series), June 15, 2001 update from the Central Statistical Organisation, Ministry of Statistics and Programme Implementation, Government of India.

Excluding the grants-in-aid, the estimate of subsidy varies between 0.8 to 1.05 percent of GSDP. Thus, estimates of subsidies vary widely between the official report (of GoM) and the NIPFP report.

The present paper is not an attempt at comparing or reconciling these two estimates. Instead it focuses on the fundamental question of whether the government's budgetary subsidies, *estimated as un-recovered costs*, can exceed the GFD. The query came up specifically in the context of deciphering the sources of financing of the subsidies (both explicit and implicit[9]) and thus ascertaining who bears the costs of the subsidies. Certain costs are borne by the society at large in terms of loss of productivity and efficiency. These maybe estimated as the social dead weight losses but they may or may not impinge upon the government budget.[10] Subsidies that impact upon the budget must be a part of the expenditures (on goods and services provision) of the government.

So long as public expenditure (on goods and services) is financed by tax and non-tax revenues, subsidies represent inter-personal transfers and redistribution, with the government acting as facilitator. The inter-personal transfers are generally achieved through price discrimination across different sections of consumers.[11] So long as such price variations are revenue neutral they have an impact on the resource allocation mechanism but do not influence the sustainability of the government expenditure program.

Often government expenditure exceeds the sum of tax and non-tax revenue. The revenues then constitute the recovered costs of government expenditures, while the un-recovered costs have to be financed by borrowings.[12] The total borrowing requirements of the government from all sources are known as the GFD. The GFD is, therefore, a measure of the extent to

[9] Implicit subsidies are targeted (or administered) indirectly and also referred to as *hidden* subsidies. These arise out of below cost provision of goods and services produced in the public sector. Explicit or direct subsidies refer to income supplements or to transfers and payments at a predetermined rate (of production or consumption).

[10] They have an impact on the long-term growth prospect of the economy. However, to distinguish between the costs borne by the society at large and those borne by government budgets, we take recourse to the idea of gross and net subsidies. The former would include inefficiency costs (due to misallocation of resources) while the latter pertain to the subsidies impacting the government budget.

[11] For example, supply of electricity in India at different prices to agricultural, household, industrial and commercial consumers. The last 2 groups generally are discriminated against while the other 2 face a favourable price. If administered appropriately this should have no net effect on the government budget.

[12] In a static (one period) world, there probably would be no need for investment, but [Musgrave (1987)] argues "…consideration of intergenerational equity thus permit public investment, the benefits from which accrue to future generations, to be loan financed while calling for current services to be tax financed. This establishes the rationale for a dual budget system with balance in the current and loan finance in the capital budget."

which the economy is living beyond its present means (income). In reality a substantial component of the GFD may actually represent investment with only a part of it subsidizing the present consumption plan. Even if all the borrowings were assumed to be financing the present consumption plan, this measure of subsidy should not exceed the GFD. A relevant objective here would be to minimize this component of GFD.

In this paper we explore the reasons for the wide gaps in the measure of fiscal deficit and the estimate of aggregate subsidy and suggest an improvement in the methodology to estimate the latter. The plan of this paper is as follows. Section II discusses the meaning, scope and definition of subsidy to dispel some of the myths associated with the term. In section III a simple algebraic structure is presented to provide a theoretical ceiling on aggregate subsidy. Section IV elucidates the economic rationale for subsidies and the need to study their impact / incidence as a significant policy tool. Section V critically analyses the methodology followed by NIPFP and outlines the reasons for the errors in the estimates. An alternative formulation to estimate the un-recovered costs (net aggregate subsidy) is then advanced. Finally, section VI concludes by emphasizing the need for reconciliation between the fiscal deficit and aggregate subsidy estimation and the consequent need for broader macroeconomic consistency.[13]

## II. Taxonomy of Subsidy

The word subsidy is derived from (Latin) *subsidium* meaning *troops stationed in reserve*, and essentially implies *coming to assistance from behind*. The perceived outcome of subsidy manifests in the form of *alteration in relative prices* and / or *relaxation of the private budget constraint.* A subsidy in its simplest form is a negative tax – a reverse flow (transfer) from the government to the public – or an income / consumption supplement for individuals.[14] Subsidies, like taxes, may thus be lump-sum, proportional (*ad valorem* or specific) or progressive.

[13] Note that it is not to propose that aggregate subsidy should equate the GFD, but merely that it should not exceed the GFD.

[14] Governments do not have a profit motive. That is, in the net, all revenues garnered by the government tend to be redistributed. An income supplement to the poor administered under a poverty alleviation programme, generally referred as a transfer, is also a subsidy. But if this is financed by collecting taxes from the relatively affluent, then in the aggregate it is redistribution from the rich to the poor.

Commonly though there is a perverse connotation to the word subsidy, that it is a *dole*. For an economic point of view, this connotation should be limited to the amount not justified by the extent of positive externalities. To the extent that there are negative externalities, there has to be a system of taxation that compensates those affected. Thus Graaf (1987) writes that, "…(It) is a simple point, often overlooked, but recognized in the older literature when reference was made to systems of taxes and subsidies. The latter were to go not only to those creating external economies but to those suffering external costs." This happens because it is widely perceived that negative external effects are more easily passed on to other economic agents than positive externalities being internalized.

A comprehensive estimate of subsidy would involve providing for estimates of *justified* subsidy and societal dead weight losses (the latter distinguish the net subsidy from gross subsidy). *Justified* subsidies compensate for the positive externalities and in several cases also induce a reduction in activities that generate negative externalities. The latter is important since these must ideally be financed by tax funds. To quote Graaf (1987) again "…(C)orrective taxes are best seen in this light. They are seldom a practical way of achieving Pareto efficiency. But they could be part of a second best solution to the problem of market failure."

It must therefore be understood that subsidy *per se* is not unambiguously *bad* – it is the mechanism of administering it and poor targeting that can yield perverse results. Subsidies are as much an economic tool as are taxes to facilitate smooth functioning of the economy. Graaf (1987) puts this succinctly, "…(that) corrective taxes and subsidies are concerned with the latter [one in which all (market) opportunities for mutually beneficial bargains had been exhausted] not with the distribution of the gains from trade – that is to say with efficiency not equity."

Analogous to the case of taxation, the more indirect the mechanism of administration, the more difficult it gets for the subsidy to reach its intended beneficiary – the identification of beneficiaries is absolutely essential as much as it is important to adjudge the incidence of taxation. Any amount of tax contributed (either directly or indirectly) by an individual should not exceed the extent of private benefit that an individual derives from pure public services and the cost of all the externalities that he or she imposes on to the society. The costs of *publicly provided privately consumed* services should be recovered from individuals in the

form of fees or tariffs and rents, in direct proportion to the level and extent of consumption of these services by the respective individuals and the costs incurred in the provision of these services (of course all the costs and benefits must be valued in terms of a neutral agent that may either be the government or the individual or entity or group in the population with the median level of income or consumption ability (see also Sandmo (1987)). Analogously, the amount of subsidy garnered by an individual (directly or indirectly) should not exceed the sum of costs incurred to mitigate the negative externalities (by others actions) and the benefits (to others) extended as positive externalities (due to one's own actions).

What should and what should not be considered as a subsidy? This is an important question because, unless identified correctly, most public expenditure programs and public provision program can be misconstrued as amounting to a subsidy for the simple reason that they are not generating any returns. Clearly such an interpretation is erroneous. Many public expenditure programs have to be designed in a manner that effectively redistribute from the rich to the poor. Such a strategy is important to address the government's redistributive objective. The following questions would appear important when identifying subsidies.

First, should non-imposition of a tax be construed as amounting to a subsidy? Thus there have been suggestions to consider tax incentives, tax holidays and exemptions as implicit subsidies. Such an interpretation of the system of taxation tends to delink the revenue raising authority of the government from its constitutionally laid down duty to provide a conducive environment for business and commerce. The foregone tax revenue is notional and would not have accrued if the taxed activity had not been present. In the absence of such incentives these industries would not have come up. A good or service is deemed to have been subsidized if and only if there is an alternative means of judging its costs (for comparison). Non-taxation or taxation at a zero rate is not equivalent to subsidization.

Second, when the government undertakes cross subsidization, as a marketing tool (say, the pricing of petroleum products and the pricing of electricity across different sections of the consumers), then the net impact needs to be computed: the subsidy on diesel should be viewed in conjunction with the tax on petrol, for example. Similarly the under-pricing of power for households and overpricing of power for industrial and commercial consumers should be ascertained jointly. If price discrimination is accepted as a reality then subsidy needs to be estimated based on whether the price being charged is less than the average cost.

One may be tempted to believe that household consumption of power is subsidized in relation to industrial and commercial consumers, when possibly all of them are net taxed considering that the production processes may have inbuilt inefficiencies that jack up the cost of production. However, the true quantum of consumption subsidy should be based on a benchmark based on the most efficient method of production, or in the least, a benchmark based on the available best practice.

Third, commonly, a subsidy *refers to a specific good* the relative price of which has been altered, with a view to changing the consumption or allocation decision in favour of the subsidized good. Subsidy can thus arise either due to *expenditure allocation, administered prices* or due to *non-recovery of costs* (Srivastava and Sen (1997)). The last of these forms the most comprehensive estimate and would include both subsidies to the consumers (in the form of income supplement and below cost provision) as well as to the producers (production inefficiencies).

Finally, subsidy may be said to have been extended if and only if goods and services are provided or made available at less than the costs incurred in their production or provision. The moot question is how to arrive at these costs? Should one look only at basic costs (exclusive of taxes or primary costs) or tax inclusive costs? If taxes are considered as components of costs then waiving of taxes is a subsidy, else it is not. Could taxes be considered as the factor payment to the government (for providing the legal, regulatory and institutional framework)?[15] In that case taxes are an administered cost component. However, a counterargument can be that taxes in general are the fall-out of the bargaining capacities of the various lobbies. The tax structure may then be said to have been determined as a result of a political bargaining process.[16]

In light of this discussion it would be important to articulate a framework for quantifying subsidies and providing an aggregate measure of them. The next step would be to identify activities that garner these subsidies. One should then identify the beneficiaries of subsidy

[15] If taxes are to be considered as items of basic cost, then taxes would get endogenised and the input of this factor (namely government) can be optimised, and it should be technically possible to decide on the optimum quantum (that is size of government) of this factor.

[16] Say, the political parties (and in turn politicians) give out their respective proposals to the populace, that in turn decide upon whom to get into place for governance.

with any attempt to bring about any changes preceded by a clear understanding of the mechanism of deliverance of the subsidy. We proceed to these issues now.

## III. A Framework for Quantifying Subsidies

Let $R$ and $K$ be the government revenue and capital expenditure respectively. Let $E_{PubR}$ and $E_{PvtR}$ ($E_{PubK}$ and $E_{PvtK}$) be the revenue (capital) expenditures respectively on *pure public* goods and *publicly provided privately consumed* goods (the term *goods* is used to denote the more general *goods and services*).[17]

Then, total expenditure, $E = R + K = (E_{PubR} + E_{PvtR}) + (E_{PubK} + E_{PvtK})$; or,

$$E = (E_{PubR} + E_{PubK}) + (E_{PvtR} + E_{PvtK})$$

Let total accruals to the government be $Y = Y_T + Y_{NT} + Y_B$, where $Y_T$ denotes tax revenue, $Y_{NT}$ the non-tax revenue[18] and $Y_B$ the borrowings[19] of the government (let $Y_G = Y_T + Y_{NT}$).

Total Expenditure equals Total Resources, that is, $E = Y$, and Revenue Deficit (RD) is then given by,

$RD = (E_{PubR} + E_{PvtR}) - (Y_T + Y_{NT})$; or, $RD = (E_{PubR} + E_{PvtR}) - Y_G$

In reality, the divide between revenue and capital expenditure is largely illusory.

Tax and non-tax revenues ($Y_G$) constitute the recovered costs while un-recovered costs (the broadest measure of subsidies) are financed by borrowings. But not all of the borrowing goes into financing the current consumption and even if it did, the budgetary subsidy thus estimated would be capped by the resultant gross fiscal deficit. One thus gets, after dropping the subscripts $R$ and $K$ and clubbing them together:

$GFD = (E_{Pub} + E_{Pvt}) - (Y_T + Y_{NT}) = Y_B$

[17] Example for a (near) pure public good is sewerage while that for publicly provided privately consumed good maybe education, water supply, medical and health services etc.

[18] Including grants.

[19] Note that the borrowings can be further classified into internal ($B_I$) and external ($B_E$) components without disturbing the underlying relationships.

Ideally,[20] all the pure public goods should be completely financed from the tax revenue.[21] Then subsidy happens only in the case of publicly provided privately consumed goods. [22] Rearranging one has,

$$GFD = (E_{Pub} - Y_T) + (E_{Pvt} - Y_{NT})$$

Gross subsidy[23] for the publicly provided privately consumed goods is then given by the expression in the second parenthesis on the R.H.S. It follows that,

$$(E_{Pvt} - Y_{NT}) - (GFD) = (Y_T - E_{Pub}) \quad \ldots..(1)$$

Now, $Y_T$ can be >, = or < $E_{Pub}$. The following cases may be distinguished.

i. If $Y_T = E_{Pub}$ then, all the tax revenue is expended on pure public services. In this case, $(E_{Pvt} - Y_{NT}) = (GFD)$. This is to suggest that the gross subsidy (GS) is capped by the extent of the fiscal deficit and is equal to the budgetary subsidy. In reality however such a situation will be difficult to attain.

ii. If $Y_T > E_{Pub}$ then, tax revenue exceeds expenditure on pure public services. While gross subsidy continues to be $(E_{Pvt} - Y_{NT})$, not all of it impinges on the budget (or impacts the deficit) – a part of the subsidy is financed by the revenues (excess over $E_{Pub}$) raised through general taxation. So the budgetary subsidy, also the net subsidy (NS), is again capped by the corresponding fiscal deficit and the gross subsidy exceeds the fiscal deficit by the amount of the excess tax revenue over expenditure on pure public services.

[20] A caveat is in place here. Even pure public goods can be provided by private agencies but such provision will typically be inadequate. See Jha (1998), chapter 6, for example.

[21] Musgrave (1987), for example writes, "… here the basic issue is why certain goods and services have to be provided for through the budget that is paid for by taxes and made available free of direct charge." Careful interpretation can avoid misconstruing as subsidy, a public expenditure programme that does not entail a direct charge.

[22] Unless it so happens that the tax revenue raised is insufficient to finance the pure public goods, in which case it results in a societal subsidy that would get reflected in the deficit and future liabilities.

[23] There is need to distinguish between gross (societal) subsidy and net subsidy – see later for the reasons. Net subsidy (in this scheme) is the aggregate measure of subsidy.

For example, table 2 below gives the expenditure on general services (assumed to be pure public goods)[24] of the government of Maharashtra, over the decade of the 1990's.

## Table 2: Expenditure on General Services

(Rupees Crore)

| Year | Total Tax Revenue | Own Tax Revenue (% of 2) | Expenditure (% of 2) |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| 1999-00 | 19874 | 83 | 63 |
| 1998-99 | 17124 | 80 | 62 |
| 1997-98 | 15451 | 86 | 59 |
| 1996-97 | 13990 | 81 | 57 |
| 1995-96 | 12612 | 84 | 53 |
| 1994-95 | 11175 | 82 | 53 |
| 1993-94 | 9238 | 81 | 54 |
| 1992-93 | 7958 | 79 | 58 |
| 1991-92 | 7174 | 80 | 54 |
| 1990-91 | 6150 | 81 | 51 |

Source: Finance Accounts, Finance Department, Government of Maharashtra, Various Issues.

Expenditures on general services are sufficiently covered by total tax revenue (or even own tax revenue) leaving a significant surplus to finance some of the social and economic services.

iii. If $Y_T < E_{Pub}$, then tax revenue is insufficient to finance even pure public services – this may indeed turn out to be a potentially explosive and destabilizing situation. This could prompt attempts to suggest that raising non-tax revenues may finance pure public services but would probably compromise efforts to augment tax revenues.

The second situation is likely to be encountered most commonly. Note that the financing of pure public goods and services through general taxation also ensures that individuals in the society contribute towards financing of that service according to their capacity and this in turn is co-synchronous with their private valuation of the benefits from these services. Smith (1776) writes, "…the subject of every state ought to contribute towards the support of the

[24] In Srivastava and Sen (1997), the social and economic services are broadly assumed to constitute the publicly provided privately consumed goods and are further segregated into merit and non-merit categories.

government, as nearly as possible in proportion to their respective abilities, that is, in proportion to the revenue, which they respectively enjoy under the protection of the state."[25]

The formulation (expression 1 above given as $(E_{Pvt} - Y_{NT}) - (GFD) = (Y_T - E_{Pub})$) can be viewed alternatively in the *cost recovery by user-charges* framework, where one can focus on a particular service (and not public sector as a whole). Assuming that no externalities arise in consumption, if the service or good were being produced in the private sector, then let, $E_{Pub}$ is the extent (or cost) of production externality associated with a *given* good or service and $E_{Pvt}$ is the private production cost[26] of that same good or service. A private producer (in a competitive market) may be satisfied to recover just $E_{Pvt}$. Analogously, it can be seen that, if the good were being produced in the public sector, then it may be difficult to recover more than $E_{Pvt}$ from the individuals in the form of user charges. Note that for completely divisible services and goods satisfying the exclusivity criterion, $E_{Pub}$ will be difficult to estimate and maybe negligible in several cases. On the contrary, for indivisible goods and services $E_{Pub}$ will be very high. $E_{Pub}$ is then essentially the component that needs to be financed by general taxation, as it is the value of the externality in the service (or the economy) be it production or consumption based).

Ideally then, the extent (level) of taxation on a good or service should be adequate to compensate for the negative externalities, the extent of subsidization should be adequate to reward for the positive externalities and $E_{Pvt}$ should be recovered as user-charges from the consumers. The next section details some of the commonly encountered justifications for subsidies.

## IV. Subsidy Administration: Multiplicity of Objectives

Over the years, the rationale for subsidies has evolved considerably. But a recurring theme has been to internalize positive externalities. These externalities could be associated with promoting self-reliance, increased capacity to undertake research and innovate or merely to provide employment opportunities.[27] For example production subsidies may be administered

[25] Musgrave (1987) in a similar vein suggests that the tax burden should be distributed equitably, that is, taxation in line with benefits received and taxation in line with ability to pay.
[26] Costs include normal profits.
[27] This is the dual of the principal economic reason for *taxation*. Taxation is ideally meant to redraw the private supply and demand curves to closely resemble the social cost and demand curves.

in the form of direct price support or reduced tax liabilities to provide for protection of domestic production. Such a strategy may enable domestic production to survive the initial high cost phase[28] and benefit from learning in the long run to reduce costs.[29] But note that these do not constitute what may be termed as budgetary subsidies. Essentially the consumers bear the burden of inefficient production.

Consumption subsidies may help by reducing inequality. There may exist highly unequal capacities (ability or capability to earn sufficient income and relative lack of employment or income generating opportunities) – either due to severe market distortions or due to historical factors. In such situations, some forms of direct income support or consumption and / or employment supplements may help in preventing public disaffection.[30] Subsidies for poverty alleviation also belong to this category, although it may be argued that such subsidies are not well targeted and often have disincentive effects. Some forms of indirect subsidsation may lead to substantial dead-weight losses. Thus considerations of employment generation or employment protection result in decline in productivity and escalation in costs and inventory.

Finally, while the underlying targets of subsidisation have remained unchanged, the relative importance of the more philanthropic economic objectives of the *social planner* has substantially declined. Current reasons for subsidization are more immediate (largely political and often attempting to uphold the virtues of democracy). Subsidies are driven largely by the lobbying capabilities (among producers) and the voting power invested among the economically weaker sections of the population.[31]

[28] By boosting demand when production is below capacity and both average as well marginal costs are on the decline.

[29] In this context (and in general also), it should be remembered that such forms of subsidies should be time-bound and subject to periodic review and not extend ad-infinitum.

[30] Musgrave (1987) says that, "…traditional arguments favour a general income subsidy or supplement – rather than selective subsidies designed to support particular uses of income." Moreover, "…transfers have come to claim an increasing share of total spending. Aimed at correcting the distribution of income, they may be viewed as negative taxes."

[31] Musgrave (1987), "… If the donors satisfaction is derived from the pleasure of individual giving, giving remains a private good. But if it is derived from the welfare of others, giving assumes a social-good quality and calls for budgetary provision. Yet the outcome reflects the initial distribution of income and thus does not resolve the more basic problem of primary distribution. This transcends considerations of pareto efficiency and broader grounding in a theory of justice is required, be it a Lockean rule of entitlement, a utilitarian concept of maximum welfare, or a Rawlsian sense of justice as fairness. But notwithstanding this inherent link to a theory of justice, economic analysis retains a decisive role. The size of the pie is linked to its distribution and redistribution involves an efficiency cost. The one therefore cannot be determined without the other."

It is also pertinent to note that relatively short-term political considerations need not always conflict with the relatively long-term economic objectives.[32] Moreover, the discussion on subsidies in multilateral organisations like the WTO attempts to evaluate the relevance of the erstwhile economic justifications in the light of moves towards greater integration of world markets and attempts at globalisation. The discussion in these fora now centers upon how subsidies, within a country, may affect economies elsewhere. The more immediate issues for any given country encompass (but are not limited to) effects of agricultural subsidies on the cropping pattern, their impact on inter-regional disparities in development, and sub-optimal use of resources like water and power.

In its literal sense, a subsidy (recall from the paragraph on the dictionary meaning) should be provided for out of the cumulative savings or reserves. However, by an ingenious evolution, there has been an increased reliance on borrowing from the future to finance current or present expenditures. This relatively newer form of subsidisation is essentially (or more realistically) taxation of the future. The profligate misuse of such economic instruments, resulting in fiscal instabilities, is cause for serious concern.

Most subsidies emanate from the government budgets, while there maybe others that are quasi-fiscal or completely off-budget arising out of regulatory regimes. In this paper we focus on estimation of budget-based subsidies. Unhindered growth in the underlying subsidies has resulted in precarious fiscal health of several governments. Coupled with this, a stronger demand for improved transparency in governance has led economists to assess the impact and extent of inherent subsidies in an effort to alleviate the fiscal imbalances due to government actions.

There is a growing tendency towards *excess* subsidisation of most public services in all the states. Policy correctives can be worked out only after suitable quantification of the estimates for each of these services. This may further inculcate greater transparency in the budgetary exercise. The following section discusses in detail the methodology[33] adopted to estimate the subsidies (as un-recovered costs) in the Indian budget.

[32] The relative gap between the short and long terms would narrow with reduced information asymmetries and faster information collation and dissemination.
[33] This refers to the methodology followed in Srivastava and Sen (1997). .

## V. Critical Review of the Methodology for the Computation of Recovery Rates

As noted earlier, a comprehensive estimate of subsidies may be computed as the *unrecovered costs* in the provision of a service. But this estimation is limited to publicly provided privately consumed social and economic services and excludes pure public goods (that are pre-determined and assumed to be tax financed and bereft of any subsidy, for example all the general services).[34] We now outline the Srivastava and Sen (1997) methodology and point out possible errors in interpretation and estimation.

The Srivastava and Sen (1997) formula used to compute the subsidy (S) on a specific ***good or service*** is as follows:

$$\mathbf{S = RX + (d + i)\, K_0 + i\,(Z_0 + L_0) - (RR + I + D)}$$

where,

**RX** is revenue expenditure on the good or the service,

$\mathbf{L_0}$ is the sum of loans advanced for the good or the service at the beginning of the year / period,

$\mathbf{K_0}$ is the sum of capital expenditure on the good or the service excluding equity investment at the beginning of the period,

$\mathbf{Z_0}$ is the sum of equity and loans advanced to public enterprises classified within the good or service category at the beginning of the period,

**RR** is the revenue receipt from the good or service,

**I + D** is the interest, dividend and other revenue receipts from public enterprises falling within the good or service category,

**d** is the depreciation rate and

**i** is the interest rate.

The actual estimation procedure involves several adjustments - some of which we discuss below.

[34] All the relevant data, for estimation, can be culled out from the Finance Accounts (center and states) except on the depreciation and interest rates, which need to be estimated separately. If one uses the expenditure figures on social and economic services only then the subsidy (indicated in the introductory section) in 1993-94 amounts to 119 (99) per cent of the revenue (total) expenditure on these services.

### Revenue Expenditure

First, in calculating revenue expenditure, net intra-governmental and general-purpose inter-governmental transfers have been excluded. Transfers to reserve funds are neither expenditure (or an outflow) nor an income (or inflow) and therefore are not subsidies as well (rather they are resources to finance the subsidy). These are therefore (rightly) netted out of the revenue expenditure.

Second, all *transfer* payments to Individuals and Co-operatives have also been (incorrectly) excluded from the revenue expenditure. These are however, in the nature of income supplements and maybe expended over an entire range of products and services and hence, should be included in the aggregate estimate of subsidy. Therefore these should be retained in the revenue expenditure.

Transfers to individuals include scholarships, compensation, insurance, gratuity and pension contributions, other social security measures like rehabilitation and assistance for repairs and construction, special employment and development programmes. As is obvious, many items of direct subsidy have been treated as transfers to individuals, e.g., *Scholarships*. The idea behind this was that such forms of income support are not spent fully or only on the corresponding service and thus should not be considered as an expenditure on that service – while the argument has some merit, care needs to be exercised that such forms of income supplements may not be expended on any of the publicly provided services – but, it remains a flow from the government to the individuals and hence a subsidy. Again, while some forms of *assistance* are treated as transfers others are not. As the wording suggests several such items of expenditure are a direct subsidy (especially if it does not pertain to a pure public good) and accrues to uniquely identifiable private parties or individuals.

### Capital Expenditure

The investment[35] and assistance to (even in the form of share capital of) co-operatives is considered as transfer to co-operatives (and consequently have been treated different from investments in Public Sector Undertakings (PSUs), see later). Even loans to co-operatives are

[35] The investment in co-operatives is treated as a transfer, under the assumption that it is the conscious effort of the government not to view these investments for strictly commercial gains.

treated as transfers to co-operatives and not seen as items of expenditure. This does not appear to be appropriate. For example, if no returns result from such transfers and if the principal is destined to be unrecoverable then again this is a direct form of subsidy.

While transfer to individuals is normally an income support measure and induces consumption support, transfer to co-operatives can result in both production and consumption subsidies. Often, transfers to co-operatives are indirectly used for transfers to individuals.

Third, investment in PSUs is separated from *capital outlay* in the budget. Multiplying this with the existing interest rates yields the opportunity cost of the investment that is netted against the actuals to get an estimate of the under-recovery on such investments. Such assistance can largely be treated as a production subsidy. However, any investment entails a risk and thus an opportunity cost but there is no reason to include this opportunity cost in the measure of budgetary subsidy.

**Interest Rate – Opportunity Cost of Investment**

The idea behind this is that the interest rate reflects the opportunity cost of government investment, that is, it reflects the current cost of borrowing for financing capital expenditure. In Srivastava and Sen (1997) the interest rate is computed as the average rate of interest on internal (including small savings and provident fund) and external debt incurred by the government.[36] However, one must bear in mind that (See Blejer and Cheasty (1991)) "…a significant portion of budgetary lending is composed of direct capital infusion and of government credit programs undertaken for policy purposes: namely, to supply funds to *preferred* sectors who would otherwise not have access to financial markets or who would have to pay steeper rates," and "…thus, public institutions are likely to be less profitable, and be more exposed to risk, than other financial institutions, and at a disadvantage in mobilizing voluntary resources from the financial markets."

Estimating the costs of policy actions in such cases may be especially tricky. *Is it then appropriate to use the unadjusted market rate of interest as the opportunity cost*? Arrow

[36] For example, the interest rates computed for the Center, Gujarat, Karnataka, Kerala, Maharashtra and Tamil Nadu were 9.6, 10.85, 11.20, 11.59, 11.77 and 11.83 per cent respectively. For Maharashtra, the depreciation rates in 1998-99, 1997-98 and 1993-94 are taken as 12.75 per cent, 10 per cent and 10.6 per cent respectively and the interest rates used are 12 per cent, 13 per cent and 11.77 per cent, respectively.

(1985) for example, argues that, "…Though the price system is valuable in many respects, it suffers from serious defects (like externalities, market failures and transactions costs) and cannot be left to itself to guide social life." It is therefore suggested that an estimate of the social rate of discount be used to compute the benchmark interest cost.

### Depreciation Rate

The nominal depreciation rate was computed as the sum of the long-term inflation rate (measured over a period of 10 years) and a 2 percent real depreciation rate (a flat / linear rate, assuming an average life of fifty years for a capital asset). The calculation of the nominal depreciation rate follows the assumptions and methodology used by Mundle and Rao (1991) and Tiwari (1996).[37] It needs to be assured that the rate of inflation should be the multiplicative factor by which the real rate of depreciation is adjusted to arrive at some nominal cost of replacement (and not an additive factor).[38]

### Assets and Investments

Computing subsidy as an opportunity cost is essential because it is essential to study the opportunity cost of taxation. While this is agreeable for the appraisal of likely projects in the future – it does not appear appropriate to ascertain the opportunity cost of past decisions based on present day benchmarks. Opportunity costs should be based on the prevailing situation after a clear identification and enunciation of the opportunities and alternatives. However, should depreciation and interest charges be admitted simultaneously on the cumulative capital invested? While it is legitimate to include interest costs until such time that the loan (principal) amount is completely amortised – there does not appear to be any clear justification to charge depreciation on incomplete projects. To a large extent, the escalation in the project costs due to time overrun (delay in completion of the project) is accounted for by an increase in the interest and capital costs – it is therefore suggested that charging both the costs may, in several cases, lead to their overestimation due to double counting.

[37] The method however, does not adequately address the issue of summing capital expenditures of varying vintages reflecting differing value of the rupee.
[38] The reports had quite erroneously added the two rates to arrive at a nominal rate for depreciation costs.

Till such time that a project is completed, it continues to entail further capital investment and these should continue to be treated as unavoidable liabilities. These do not transform into a revenue / return yielding asset – and until this can be ensured one should charge only an interest cost on these investments.[39] One thus needs to segregate the capital invested into its components, namely those that have already resulted into revenue yielding assets and those that entail further liabilities.

The way the problem has been set up, all the investments are being shown to entail both an interest cost as well as a depreciation cost. We have argued that this is not justifiable. More importantly, the finance accounts do not report the capital invested ($K_0$ in the expression) as its written down value. Only the book values are shown and these are the cumulative nominal values over the past. Such a practice is inadmissible, because one continues to charge depreciation even on the amounts that should ideally be written off. One needs, therefore to arrive at the written down value of the capital and only then charge depreciation on it.

Finally, it appears that in the actual implementation of the proposed methodology, certain forms of expenditure have been considered as investment in public sector enterprises although these have not been reported to be so. Moreover, Srivastava and Sen (1997) report that there are other noteworthy limitations for example,

> "the subsidies due to tax expenditures (incentives and other concessions) are not taken into account."

It has been argued that these may be inessential in estimating the budgetary subsidies. Also,

> "subsidies implicit in a market price which would be higher than the actual price for such merit goods as technical / medical education are also not covered."

Again, this may not be true when one is computing the subsidy as the unrecovered cost of service provision. Probably, the underlying assumption is that the markets are not perfectly competitive, but then this would be true for most other economic analysis.

[39] As an example – take the case of a project of constructing a building that has been slated to be completed in 2 years Further assume that the total estimated cost of the project is Rupees 100 (present value) and that this cost is distributed evenly over the 2 years (say Rupees 50 each year). Now assuming that the project is constantly on (technologically defined) schedule, then by the end of the first year of initiation of the project Rupees 50 has already been invested but this does not yield an (depreciable) asset unless the engineering schedule for the second year is completed. One can thus start charging depreciation only at the end of the second year, or to be more precise from the third year (since the initiation of the project) or from the year following the completion of the project.

Taking cognizance of the above mentioned errors and limitations we propose the following revised expression for estimating the unrecovered costs in good or service *j*. It appears as:

$$\mathbf{S_j = RX_j + (d * \rho * \alpha_j * K_j) + i\,(Z_j + L_j) - (RR_j + I_j + D_j) - (\beta_j * T)}$$

where,

$\mathbf{S_j}$ is the subsidy estimated as unrecovered costs in the provision of good or service ***j***,

$\mathbf{RX_j}$ is revenue expenditure on the good or the service after netting out the inter and intra governmental transfer of funds (but including the transfers to individuals and co-operatives),

**d** is the real rate of depreciation of physical assets

$\rho$ is the rate of inflation or preferably the rate of change in the purchasing power of the Rupee (or the national currency, this equals 1 if the currency can hold its value, greater than 1 if it loses value and less than 1 if it gains value),

$\alpha_j$ ($0 \leq \alpha_j \leq 1$) is the proportion of capital expenditure that has already produced a revenue-yielding asset,

$\mathbf{K_j}$ is the written down value of capital expenditure on the good or the service (including equity investment at the beginning of the period),

**i** is the social rate of discount or the real rate of interest or the real rate of depreciation of financial assets or the rate of time preference,

$\mathbf{Z_j}$ is the sum of equity / investment in public enterprises, co-operatives etc. classified within the good or service category at the beginning of the period,

$\mathbf{L_j}$ is the sum of loans advanced to PSEs and Co-operatives for the good or the service at the beginning of the year / period,

$\mathbf{RR_j}$ is the (non-tax) revenue receipt from the good or service,

$\mathbf{I_j}$ is the interest receipts from public enterprises falling within the good or service category,

$\mathbf{D_j}$ is the dividend and other revenue receipts from public enterprises and co-operatives falling within the good or service category

$\beta_j$ is the component of total tax revenue utilized in financing of the service

**T** is the sum of total tax revenue (own tax plus share in central taxes) and grants-in-aid contribution.

To implement this formula one needs to estimate the various parameters like *d, $\rho$, $\alpha_j$, i and $\beta_j$.* However, given these parameters and the refinements in the implementation of the methodology, it is hypothesized that the aggregate measure of subsidy (as un-recovered

costs) would show some *increase on account of inclusion of transfers to individuals and transfers to co-operatives* when compared with the formulation used in Srivastava and Sen (1997). But there would be a *substantial reduction in the aggregate due to revaluation of interest rates, depreciation costs and the segregation of capital expenditure into its components* (those that have already yielded assets and those that entail further investments) as well as the *component of tax (including grants) financing of the goods and services*.

As an example, the aggregate un-recovered costs incurred by the Government of Maharashtra for the year 1998-99 was estimated based on the following.

- Revenue Expenditure, net of transfers to reserve funds, was estimated at Rs. 15411.51 Crores for the year 1998-99.
- A real rate of depreciation (d) of physical assets in the straight-line method assumed as 2 per cent per annum (which in turn assumes a life of 50 years).[40]
- A rate of inflation ($\rho$) of 10.75 per cent per annum (as used in Srivastava and Sen (1997)).
- The proportion of capital expenditure resulting in return yielding completed projects ($\alpha$) assumed at 50 per cent of the total capital expenditure.[41]
- The value of capital expenditure (K) is the book value (as given in the finance accounts), net of transfers to reserve funds and equity or other investments in PSEs, Co-operatives and others. In the beginning of the year 1998-99 this was estimated at Rs. 20745.18 Crores.
- The rate of time preference (i) was assumed at 4.5 per cent per annum – based on the then prevalent rate of interest on current (savings) deposits in the banks.
- The equity or investment (Z) in PSEs, Co-operatives at the beginning of the year 1998-99 is estimated at Rs. 4711.22 Crores.
- The loans to PSEs and other institutions (L) at the beginning of the year 1998-99 was estimated at Rs. 7927.48 Crores.
- The non tax revenue receipts (R) from the social and economic services is estimated at Rs. 1629.88 Crores during the year 1998-99.

[40] Care needs to be exercised that this rate is applicable on the initial book value of the assets while the revised method suggests the use of written down value of physical assets. Moreover an average life of 50 years maybe an underestimate especially if one considers the large proportion of assets in irrigation, road and power projects. A longer average life of projects will significantly reduce the annual depreciation costs.

[41] This in turn implies that 50 per cent of the book value of capital expenditure is used up for the work-in-progress.

- The interest receipts (I) on the loans is estimated at Rs. 244.56 Crores during the year 1998-99.
- The dividend receipts (D) on investments is estimated at Rs. 6.01 Crores for the year 1998-99.[42]
- The proportion (β) of the sum of total tax revenue (own tax plus share in central taxes) and the grants in aid used in financing the social and economic services is assumed at 40 per cent.[43]
- The sum of total tax revenue (own tax plus share in central taxes) and the net grants in aid[44] for the year 1998-99 is estimated at Rs. 17988.33 Crores.

Given the above assumptions (on parameter values) and estimates the aggregate (net) subsidy for the state of Maharashtra, computed as the un-recovered costs in the public provision of social and economic services for the year 1998-99 works out to be Rs. 7134.23 Crores.[45] This works out to about 3.4 per cent of the GSDP for that year.

## VI. Conclusions

The term *subsidy* has been used in a very broad sense in most discussions relating to public expenditure programs. Several elements of a prudent public policy regime are intended to be redistributive. There is no demerit in such a program unless the administrative procedure is flawed and tends to defeat the purpose. There may be leakages in such programs but their intent and content is rarely in dispute. However, there are other elements of public policy that tend to set the wrong incentives for the economic agents. These may relate to the revenue raising or to the expenditure strategies. This is especially true in the context of dealing with externalities associated with the current production and consumption programs. Improper identification of the beneficiaries or the affected combined with improper valuation of the costs and benefits lead to unintended outcomes. Such outcomes essentially impact the

[42] This includes Rs. 3.61 Crores which are un-allocable onto specific services because of lack of details.
[43] This is roughly the proportion of the sum of tax (own plus share in central) and the grants-in-aid contributions that remains after the expenditure (revenue plus capital) on the general services (see Table 2 in the text).
[44] That is the grants-in-aid received from the center minus the grants-in-aid paid out by the state.
[45] Note that this may be an over-estimate for the following reasons.
- The cost of capital may be an overestimate considering that the rate of inflation assumed is on the higher side than what is observed over the last few years.
- The rate of capital accumulation has decelerated over the last several years and it is expected that the written down value of the existing completed assets may be substantially lower than the presently assumed 50 per cent of the book value of capital expenditure.

economy in two undesirable ways. They may lead to inefficient and / or unjust resource allocation. The former are manifest in dead-weight losses while the latter can result in un-merited subsidies. This latter issue is of concern in this paper and it maybe argued that this results in unwarranted redistribution from the future to the current generations (usually manifested as excess (unfunded) current consumption by relegating the cost onto the future generations). These are essentially the net budgetary subsidies in the economy, that is the subsidies that are essentially unfunded by current revenues (tax or non-tax) contributed by the populace in general. It is only this component of expenditure (that is, subsidy estimated as the un-recovered costs and financing the excessive current consumption program) that is of concern and should be minimized. This paper shows that the subsidy estimated as the unrecovered costs of the present consumption program should not exceed the budgetary fiscal deficit.

Secondly, not all of individual burden of tax and non-tax expenditure is commensurate with the individual consumption of publicly provided goods and services. This essentially results in some redistribution. This redistribution however does not impact the budget (and can be termed as interpersonal transfer).

Thirdly, valuation or estimation of the subsidy involves subjective judgments and qualitative assessment especially when estimating the social rate of discount or the rate of time preference.

Fourthly, the money or the rupee in the hands of the government may be chosen as the numeraire and a rupee of tax collected from a rich individual may entail a lesser cost to the government (that is the social planner and maybe also the particular individual) than a rupee of tax collected from a poor individual. Analogously, a subsidy garnered by the rich may be valued lower (socially) than the one reaching the poor. However, the latter set of adjustments lead us to social valuation (not a concern of this paper) as distinct from the actual (financial) estimate of the budgetary burden.

Finally, the use of the opportunity cost concept (as earlier used by taking recourse to the market rate of interest) is not justifiable in the context of this methodology. This is especially true when the expenditure program of the government is oriented towards activities that really do not function in mature markets to warrant use of a market rate.

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